

Multicast Routing and Forwarding Commands

This module describes the commands used to configure and monitor multicast routing.

For detailed information about multicast routing concepts, configuration tasks, and examples, refer to the *Implementing Multicast Routing on Cisco IOS XR Software* configuration module in the *Multicast Configuration Guide for Cisco ASR 9000 Series Routers*.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

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accounting per-prefix

To enable accounting for multicast routing, use the **accounting per-prefix** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

accounting per-prefix

Syntax Description

This command has no keywords or arguments.

Command Default

This feature is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **accounting per-prefix** command is used to enable per-prefix counters only in hardware. Cisco IOS XR Software counters are always present. When enabled, every existing and new (S, G) route is assigned forward, punt, and drop counters on the ingress route and forward and punt counters on the egress route. The (*, G) routes are assigned a single counter.

There are a limited number of counters on all nodes. When a command is enabled, counters are assigned to routes only if they are available.

To display packet statistics, use the **show mfib route** and the **show mfib hardware route statistics** commands. These commands display “N/A” for counters when no hardware statistics are available or whenthe **accounting per-prefix** command is disabled .

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable accounting for multicast routing:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# accounting per-prefix
```

Related Commands

Command	Description
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.

Command	Description
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

accounting per-prefix forward-only

To reduce hardware statistics resource allocations when enabling accounting, particularly for multicast VPN (MVPN), use the **accounting per-prefix forward-only** command under multicast routing configuration mode. To return to the default mode of accounting per-prefix, on page 4, use the **no** form of this command.

accounting per-prefix forward-only

Syntax Description

This command has no keywords or arguments.

Command Default

If no counters are configured, there is no default.

If the accounting per-prefix counter was previously configured, it becomes the default.

If no accounting was configured for multicast routing, forwarding-only is the default mode and triggers a data MDT transition in the case of MVPN deployment.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 and IPv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

Note The **accounting per-prefix forward-only** command has only one *fwd-only* counter. In other words, there is no *punt* or *drop* counter allocated.

We recommend this command for configuration of multicast VPN routing or for any line card that has a route-intensive configuration. Each individual router can support up to 150,000 routes.

Note To verify the number of statistics allocated or free on a line card, use the show mfib hardware resource-counters, on page 77 command in EXEC mode.

There are a limited number of counters on all nodes. When accounting on a prefix is enabled, counters are assigned to routes only if they are available.

To display packet statistics, use the **show mfib route** and the **show mfib hardware route statistics** commands. These commands display "N/A" for counters when no hardware statistics are available or when neither the accounting per-prefix, on page 4 command nor the **accounting per-prefix forward-only** command are enabled.

You may switch between **accounting-perprefix** and **accounting per-prefix forward-only** statistics for ipv4 or ipv6 multicast family. However, be aware that only one set of counters is supported on the (*,G) routes

(with fwd/punt/drop on ingress and fwd/drop on egress) regardless of whether you enabled the **accounting-perprefix** or **accounting-perprefix fwd-only** command.

Although you can switch accounting modes, this involves freeing the hardware statistics and reallocating them, thereby resulting in a loss of any previously collected data. Therefore, it is preferable to decide which statistics mode you want to use at the start to avoid the resource cost entailed by resetting the statistics counter values with a change in mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable accounting per-prefix forward-only for MVPN routing:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# accounting per-prefix forward-only
```

Related Commands

Command	Description
accounting per-prefix, on page 4	Enables accounting for multicast routing.
clear mfib hardware resource-counters, on page 19	Clears global resource counters.

address-family (multicast)

To display available IP prefixes to enable multicast routing and forwarding on all router interfaces, use the **address-family** command in multicast-routing configuration mode or multicast VRF configuration submode. To disable use of an IP address prefix for routing, use the **no** form of this command.

address-family [**vrf** *vrf-name*] {**ipv4** | **ipv6**}

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	Specifies IPv4 address prefixes.
ipv6	Specifies IPv6 address prefixes.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 4.2.0	The **ipv6** keyword was added.

Usage Guidelines

Use the **address-family** command either from multicast routing configuration mode or from multicast VRF configuration sub to enter either the multicast IPv4 or IPv6 address family configuration submode, depending on which keyword was chosen. Use the **address-family** command with the multicast-routing, on page 47 command to start the following multicast processes:

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)
- Internet Group Management Protocol (IGMP)
- Multicast Listener Discovery Protocol (MLD)

Basic multicast services start automatically when the multicast PIE is installed, without any explicit configuration required. The following multicast services are started automatically:

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)
- Internet Group Management Protocol (IGMP)

Other multicast services require explicit configuration before they start. For example, to start the Multicast Source Discovery Protocol (MSDP) process, you must enter the **router msdp** command and explicitly configure it.

To enable multicast routing and protocols on interfaces, you must explicitly enable the interfaces using the **interface** command in multicast routing configuration mode. This action can be performed on individual interfaces or by configuring a wildcard interface using the **alias** command.

To enable multicast routing on all interfaces, use the **interface all enable** command in multicast routing configuration mode. For any interface to be fully enabled for multicast routing, it must be enabled specifically (or configured through the **interface all enable** command for all interfaces) in multicast routing configuration mode, and it must not be disabled in the PIM and IGMP configuration modes.

Note The **enable** and **disable** keywords available under the IGMP and PIM interface configuration modes have no effect unless the interface is enabled in multicast routing configuration mode—either by default or by explicit interface configuration.

To allow multicast forwarding functionality, while turning multicast routing functionality off, interface-inheritance disable, on page 31 command on a per interface or **interface all enable** basis in PIM or IGMP configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

This example shows how to enter IPv4 and IPv6 multicast routing configuration mode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)#

RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv6
RP/0/RSP0/CPU0:router(config-mcast-default-ipv6)#
```

This example shows how to enter IPv4 and IPv6 VRF multicast routing configuration submode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-vrf-name-ipv4)#

RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv6
RP/0/RSP0/CPU0:router(config-mcast-vrf-name-ipv6)#
```

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Related Commands

Command	Description
alias	Creates a command alias.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.
interface all disable	Disables PIM processing on all new and existing interfaces.

Command	Description
interface-inheritance disable, on page 31	Separates the disabling of multicast routing and forwarding.
interface (multicast), on page 27	Configures multicast interface properties.

address-family ipv4 mvpn (bgp)

To enable Border Gateway Protocol (BGP) on a specific IPV4 unicast destination address prefix, use the **address-family ipv4 mvpn** command in the BGP sub-configuration mode. To disable this feature, use the **no** form of this command.

address-family ipv4 mvpn [**additional-paths** | **advertise best-external** | **as-path-loopcheck out disable** | **bgp** {**client-to-client reflection cluster-id** *ip_address* **disable** | **dampening** {*time value* | **route-policy policy** *param_value*} | **label-delay** *time*} | **inter-as install** | **nexthop** {**resolution prefix-length minimum** *value* | **route-policy policy** *param_value* | **trigger-delay** {**critical** *value* | **non-critical** *value*}} | **retain** | **route-target download** | **update limit** {**address-family** *limit* | **sub-group** {**ebgp** *limit* | **ibgp** *limit*}}]

Syntax Description

additional-paths	Specifies the additional paths configuration.
advertise	Advertises the border gateway protocol path.
as-path-lookcheck	Configures AS path loop checking.
bgp	Configures the border gateway protocol commands.
inter-as	Controls the installation of the BGP MVPN routes into PIM/MLDP.
nexthop	Specifies the BGP nexthop location.
retain	Accepts or retains the specified BGP parameters.
route-target	Routes the target RIB installation.
update	Specifies the BGP update generation configuration.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 4.2.0	The **ipv6** keyword was added.

Usage Guidelines

Use the **address-family** command either from multicast routing configuration mode or from multicast VRF configuration submode to enter either the multicast IPv4 or IPv6 address family configuration submode, depending on which keyword was chosen. Use the **address-family** command with the multicast-routing, on page 47 command to start the following multicast processes:

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)

- Internet Group Management Protocol (IGMP)
- Multicast Listener Discovery Protocol (MLD)

Basic multicast services start automatically when the multicast PIE is installed, without any explicit configuration required. The following multicast services are started automatically:

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)
- Internet Group Management Protocol (IGMP)

Other multicast services require explicit configuration before they start. For example, to start the Multicast Source Discovery Protocol (MSDP) process, you must enter the **router msdp** command and explicitly configure it.

To enable multicast routing and protocols on interfaces, you must explicitly enable the interfaces using the **interface** command in multicast routing configuration mode. This action can be performed on individual interfaces or by configuring a wildcard interface using the **alias** command.

To enable multicast routing on all interfaces, use the **interface all enable** command in multicast routing configuration mode. For any interface to be fully enabled for multicast routing, it must be enabled specifically (or configured through the **interface all enable** command for all interfaces) in multicast routing configuration mode, and it must not be disabled in the PIM and IGMP configuration modes.

Note The **enable** and **disable** keywords available under the IGMP and PIM interface configuration modes have no effect unless the interface is enabled in multicast routing configuration mode—either by default or by explicit interface configuration.

To allow multicast forwarding functionality, while turning multicast routing functionality off, interface-inheritance disable, on page 31 command on a per interface or **interface all enable** basis in PIM or IGMP configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

This example shows how to enter IPv4 andIPv6 multicast routing configuration mode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)#

RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv6
RP/0/RSP0/CPU0:router(config-mcast-default-ipv6)#
```

This example shows how to enter IPv4 and IPv6 VRF multicast routing configuration submode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-vrf-name-ipv4)#
```

```
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv6
RP/0/RSP0/CPU0:router(config-mcast-vrf-name-ipv6)#
```

Related Commands

Command	Description
alias	Creates a command alias.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.
interface all disable	Disables PIM processing on all new and existing interfaces.
interface-inheritance disable, on page 31	Separates the disabling of multicast routing and forwarding.
interface (multicast), on page 27	Configures multicast interface properties.

bgp auto-discovery mldp inter-as

To enable the MLDP I-PMSI core tree support, use the **bgp auto-discovery mldp inter-as** command in the BGP MVPN address-family sub configuration mode.

bgp auto-discovery mldp inter-as

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

BGP MVPN address-family sub configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

```
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf1
RP/0/RSP0/CPU0:router(config-mcast-vrf1)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-vrf1-ipv4)# bgp auto-discovery mldp inter-as
```

boundary

To configure the multicast boundary on an interface for administratively scoped multicast addresses, use the **boundary** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

boundary *access-list*

Syntax Description

access-list	Access list specifying scoped multicast groups. The name cannot contain a space or quotation mark; it may contain numbers.

Command Default

A multicast boundary is not configured.

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **boundary** command is used to set up a boundary to keep multicast packets from being forwarded.

The boundary acl can specify a mcast source address in addition to a mcast group address. The keyword "any" can be added before the mcast group range.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to set up a boundary for all administratively scoped addresses:

```
RP/0/RSP0/CPU0:router(config) # ipv4 access-list myboundary2
RP/0/RSP0/CPU0:router (config) # 10 deny ipv4 any 239.0.0.0 0.255.255.255
RP/0/RSP0/CPU0:router(config) # 20 permit ipv4 any 224.0.0.0 15.255.255.255
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router (config-mcast) # address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# interface GigE 0/2/0/2

RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# boundary myboundary2
```

clear mfib counter

To clear Multicast Forwarding Information Base (MFIB) route packet counters, use the **clear mfib counter** command in the appropriate mode.

clear mfib [**vrf** *vrf-name*] **ipv4 counter** [*group-addresssource-address*] [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
group-address	(Optional) IP address of the multicast group.
source-address	(Optional) IP address of the source of the multicast route.
location *node-id*	(Optional) Clears route packet counters from the designated node.
all	The **all** keyword clears route packet counters on all nodes

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Note This command only clears MFIB route packet software counters. To clear MFIB hardware statistics counters use the **clear mfib hardware route statistics** command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to clear MFIB route packet counters on all nodes:

```
RP/0/RSP0/CPU0:router# clear mfib counter location all
```

clear mfib database

To clear the Multicast Forwarding Information Base (MFIB) database, use the **clear mfib database** command in the appropriate mode.

clear mfib [**ipv4** | **ipv6**] **database** [**location** { *node-id* | **all** }]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
location *node-id*	(Optional) Clears global resource counters from the designated node.
all	The **all** keyword clears all global resource counters.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear the Multicast Forwarding Information Base (MFIB) database on all nodes:

```
RP/0/RSP0/CPU0:router# clear mfib database location all
```

clear mfib hardware adjacency-counters

To clear the platform-specific information related to resource counters for the Multicast Forwarding Information Base, use the **clear mfib hardware adjacency-counters** command in the appropriate mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware adjacency-counters** [**rx** | **tx**] [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
rx	Clears adjacency counters for packets received.
tx	Clears adjacency counters for packets sent.
location *node-id*	(Optional) Clears adjacency counters from the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear all adjacency counters:

```
RP/0/RSP0/CPU0:router# clear mfib hardware adjacency-counters rx location all
```

Related Commands

Command	Description
show mfib hardware resource-counters, on page 77	Displays the allocated and freed hardware resources for the Multicast Forwarding Information Base (MFIB) process.

clear mfib hardware resource-counters

To clear global resource counters, use the **clear mfib hardware resource-counters** command in EXEC mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware resource-counters** [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	(Optional) Clears global resource counters from the designated node.
all	The **all** keyword clears all global resource counters.

Command Default

IPv4 addressing is the default.

Command Modes

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **clear mfib hardware resource-counters** to estimate resource usage for an operation.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear all global resource counters:

```
RP/0/RSP0/CPU0:router# clear mfib hardware resource-counters location all
```

Related Commands

Command	Description
show mfib hardware resource-counters, on page 77	Displays the allocated and freed hardware resources for the Multicast Forwarding Information Base (MFIB) process.

clear mfib hardware route statistics

To reset all allocated counter values regardless of the Multicast Forwarding Information Base (MFIB) hardware statistics mode (accounting per-prefix or accounting per-prefix forward-only), use the clear mfib hardware route statistics command in EXEC mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route statistics** {**egress** | **ingress** | **ingress-and-egress**} [*****source-address*] [*group-address* [*/prefix-length*]] [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
ingress-and-egress	(Optional) Clears hardware statistics on both the incoming (ingress) and outgoing (egress) routes.
*****	(Optional) Clears shared tree route statistics.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location	(Optional) Clears route packet counters from the designated node.
node-id	The *node-id* argument is entered in the *rack/slot/module* notation.
all	The **all** keyword clears route packet counters on all nodes

Command Default

If not specified, IPv4 addressing is the default.

Command Modes

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs.

The Multicast Forwarding (MFWD) process exists on each line card and assigns hardware counters to each (S, G) route. Additionally, one global counter is assigned for all (*, G) routes, depending on resource availability.

To clear the set of counters for (*, G) routes, the MFWD process assigns a single set of counters to count packets that match (*, G) routes. Consequently, the **clear mfib hardware route statistics** command must be used in a form that either clears counters on all routes or matches all (*, G) routes.

Note This command only clears MFIB hardware statistics counters. To clear MFIB route packet software counters, use the **clear mfib counter** command.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following command shows how to clear counters by route statistics for all multicast routes on both ingress and egress forwarding engines for the line card 0/1/CPU0:

```
RP/0/RSP0/CPU0:router# clear mfib ipv4 hardware route statistics ingress-and-egress location
 0/1/CPU0
```

Related Commands

Command	Description
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.

disable (multicast)

To disable multicast routing and forwarding on an interface, use the **disable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

disable

Syntax Description

This command has no keywords or arguments.

Command Default

Multicast routing and forwarding settings are inherited from the global **interface enable all** command. Otherwise, multicast routing and forwarding is disabled.

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **disable** command modifies the behavior of a specific interface to disabled. This command is useful if you want to disable multicast routing on specific interfaces, but leave it enabled on all remaining interfaces.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
  - The **enable** and **no** forms of the command have no additional effect on a specific interface.
  - The **disable** command disables multicast routing on a specific interface.
  - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
  - The **enable** command enables multicast routing on a specific interface.
  - The **no enable** command enables the previously disabled interface.
  - The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# interface all enable
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# interface GigE 0/1/0/0
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
enable (multicast), on page 24	Enables multicast routing and forwarding on an interface.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.

enable (multicast)

To enable multicast routing and forwarding on an interface, use the **enable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

enable

Syntax Description

This command has no keywords or arguments.

Command Default

Multicast routing and forwarding settings are inherited from the global **interface enable all** command. Otherwise, multicast routing and forwarding is disabled.

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **enable** command modifies the behavior of a specific interface to enabled. This command is useful if you want to enable multicast routing on specific interfaces, but leave it disabled on all remaining interfaces.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
  - The **enable** and **no** forms of the command have no additional effect on a specific interface.
  - The **disable** command disables multicast routing on a specific interface.
  - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
  - The **enable** command enables multicast routing on a specific interface.
  - The **no enable** command enables a previously enabled interface.
  - The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on a specific interface only:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
```

```
RP/0/RSP0/CPU0:router(config-mcast)# interface GigE 0/1/0/0
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# enable
```

Related Commands

Command	Description
disable (multicast), on page 22	Disables multicast routing and forwarding on an interface.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.

forwarding-latency

To delay traffic being forwarded on a route, use the **forwarding-latency** command. To return to the default behavior, use the **no** form of this command.

forwarding-latency [**delay** *milliseconds*]

Syntax Description

delay *milliseconds*	(Optional) Specifies the delay time in miliseconds. Range is 5 - 500.

Command Default

The default delay time is 30 milliseconds.

Command Modes

Multicast routing configuration

IPv4 and IPv6 multicast routing configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

Use the **forwarding-latency** command when you expect a receiver to leave and rejoin the same multicast group within a very short period such as 20 or 30 milliseconds. The delay may be required to provide the router sufficient time to update its Multicast Forwarding Information Base (MFIB) table.

When the **forwarding-latency** command is enabled, each interface is allocated a separate table lookup unit (TLU) block in the output interface list (olist), thereby increasing TLU hardware resource usage, and, for this reason, it should be used with caution when many multicast routes are present.

When the **forwarding-latency** command is disabled, up to three interfaces may share a single TLU block in the olist.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to delay traffic from being forwarded for 120 milliseconds:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router# forwarding-latency delay 120
```

interface (multicast)

To configure multicast interface properties, use the **interface** command in the appropriate configuration mode. To disable multicast routing for interfaces, use the **no** form of this command.

interface *type interface-path-id*

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration

IPv4 or multicast routing configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **interface** command to configure multicast routing properties for specific interfaces.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# interface all enable
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# interface GigE 0/1/0/0

RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
disable (multicast), on page 22	Disables multicast routing and forwarding on an interface.

Command	Description
enable (multicast), on page 24	Enables multicast routing and forwarding on an interface.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.

interface all enable

To enable multicast routing and forwarding on all new and existing interfaces, use the **interface all enable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

interface all enable

Syntax Description

This command has no keywords or arguments.

Command Default

Multicast routing and forwarding is disabled by default.

Command Modes

Multicast routing configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

This command modifies the default behavior for all new and existing interfaces to enabled unless overridden by the **enable** or **disable** keywords available in interface configuration mode.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
  - The **enable** and **no** forms of the command have no additional effect on a specific interface.
  - The **disable** command disables multicast routing on a specific interface.
  - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
  - The **enable** command enables multicast routing on a specific interface.
  - The **no enable** command enables a previously enabled interface.
  - The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# interface all enable
RP/0/RSP0/CPU0:router(config-mcast)# interface GigE 0/1/0/0
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
disable (multicast), on page 22	Disables multicast routing and forwarding on an interface.
enable (multicast), on page 24	Enables multicast routing and forwarding on an interface.

interface-inheritance disable

To separate PIM and IGMP routing from multicast forwarding on all interfaces, use the **interface-inheritance disable** command under multicast routing address-family IPv4 submode. To restore the default functionality, use the **no** form of the command.

interface-inheritance disable

Syntax Description

This command has no keywords or arguments.

Command Default

This feature is not enabled by default.

Command Modes

Multicast routing configuration

Address- family IPv4 configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use of the **interface-inheritance disable** command together with the **interface** *type interface-path-id* or **interface all enable** command under multicast routing address-family IPv4 submode separates PIM and IGMP routing functionality from multicast forwarding on specified interfaces. You can nonetheless enable multicast routing functionality explicitly under PIM or IGMP routing configuration mode for individual interfaces.



Note Although you can explicitly configure multicast routing functionality on individual interfaces, you cannot explicitly disable the functionality. You can only disable the functionality on all interfaces.

Used from the address-family ipv4 configuration submode, it prevents IGMP and PIM from inheriting the multicast-routing interface configuration.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following configuration disables PIM and IGMP routing functionality on all the interfaces using the **interface-inheritance disable** command, but multicast forwarding is still enabled on all the interfaces in the example, based on use of the keywords **interface all enable** .

PIM is enabled on *Loopback 0* based on its explicit configuration (**interface** *Loopback0* **enable**) under router pim configuration mode.

IGMP protocol is enabled on GigabitEthernet0/6/0/3, because it too has been configured explicitly under router igmp configuration mode (**interface** *GigabitEthernet0/6/0/3* **router enable**):

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# interface-inheritance disable
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# interface loopback 1 enable

RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# show run router pim
```

With the **interface-inheritance disable** command in use, IGMPand PIM configuration are enabled in the protocol configuration as follows:

```
router igmp
  interface loopback 0
    router enable

router pim
   interface loopback 0
     enable

router pim vrf default address-family ipv4
 interface Loopback0
  enable


RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# show run router igmp

router igmp
 vrf default
  interface GigabitEthernet0/6/0/3
   router enable
```

log-traps

To enable logging of trap events, use the **log-traps** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

log-traps

Syntax Description

This command has no keywords or arguments.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable logging of trap events:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# log-traps
```

maximum disable

To disable maximum state limits, use the **maximum disable** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

maximum disable

Syntax Description

This command has no keywords or arguments.

Command Default

Maximum state limits are enabled.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **maximum disable** command to override the default software limit on the number of multicast routes.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to disable maximum state limits:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# maximum disable
```

mdt c-multicast-routing

To configure customer multicast routing (c-multicast-routing) for multicast distribution trees (MDT) and to enter the c-multicast-routing mode, use the **mdt c-multicast-routing** command in the appropriate mode. To delete the configuration, use the **no** form of the command.

mdt c-multicast-routing [**bgp** | **pim**]

Syntax Description

bgp	Enables customer multicast routing for BGP.
pim	Enables customer multicast routing for PIM.

Command Default

None

Command Modes

PIM VRF address-family configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

Example

This example show how to run the **mdt c-multicast-routing**:

```
RP/0/RSP0/CPU0:router(config-pim-v1-ipv4) # mdt c-multicast-routing bgp
```

mdt data

To configure multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN), use the **mdt data** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt data *mdt-group-address/mask* [**threshold** *threshold-value*] [*acl-name*]

Syntax Description

mdt-group-address	IP address of the MDT group.
/ mask	A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
threshold *threshold*	Specifies the traffic rate threshold to trigger data MDT. Range is 1 to 4294967295.
acl-name	Access list (ACL) for the customer's VRF groups allowed to perform data MDT.

Command Default

threshold : 1

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 and IPv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.0	Additional keyword information was added to the command. The bottom of the threshold value range was increased by 1.

Usage Guidelines

When certain multicast streams exceed a configured bandwidth, the multicast data is moved to an MDT data group that is dynamically chosen from an available pool of multicast addresses. If the traffic bandwidth falls below the threshold, the source is switched back to the default MDT. To avoid transitions between the MDTs, traffic only reverts to the default MDT if traffic below the data MDT threshold is at least one minute old.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the data MDT group:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# mdt data 172.23.2.2/24 threshold 1200 acl_A
```

Related Commands

Command	Description
mdt default, on page 39	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt mtu, on page 41	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, on page 42	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt data ingress replication

To configure ingress replication (IR) data for Multicast Distribution Trees (MDT), use the **mdt data ingress replication**command in the appropriate mode. To remove the configuration, use the **no** form of the command.

mdt data ingress replication [*acl_name* | **immediate-switch** | **number***value* | **threshold** *value*]

Syntax Description

immediate-switch	Enables switching to data MDT immediately.
acl_name	ACL fo vrf groups that are enabled for data MDT
number *value*	Maximum number of data MDTs to be triggered. Range is 1 to 262143.
immediate-switch *value*	Traffic rate threshold (in kbps) to trigger data MDT. Range is 1 to 4294967.

Command Default

None

Command Modes

Multicast routing VRF address-family configuration

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to run the **mdt data ingress replication** command:

```
RP/0/RSP0/CPU0:router (config-mcast-v1-ipv4) # mdt data ingress-replication immediate-switch
```

mdt default

To configure the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT), use the **mdt default** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt default {*mdt-default-group-address* | **ipv4** *mdt-default-address*}

Syntax Description

mdt-default-group-address	IP address of the MDT default group entered in *A.B.C.D.* format.
ipv4	Specifies IPv4-encapsulated MDT.
mdt-default-address	MDT IPv4 default address entered in *A.B.C.D.* format

Command Default

The MDT default group address must be unique.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 and IPv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.0	Additional keyword information was added.

Usage Guidelines

The default MDT has a unique group address used to create MVPN multicast tunnel interfaces.

Although within the multicast VRF configuration submode, the MDT configuration uses either the **ipv4** or **ipv6** keyword to distinguish the appropriate multicast VPN, the MDT core tree is IPv4.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MDT default group address from multicast routing configuration mode:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# mdt default
172.16.10.1
```

The following example shows how to configure the MDT default group address from multicast VRF configuration submode for an IPv6 address family:

```
RP/0/RSP0/CPU0:router# multicast-routing
```

```
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv6
RP/0/RSP0/CPU0:router(config-mcast-vrf-name-ipv6)#mdt default 172.16.10.1
```

Related Commands

Command	Description
mdt data, on page 36	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt mtu, on page 41	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, on page 42	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt mtu

To configure the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT), use the **mdt mtu** command in multicast VPN configuration mode. To remove this functionality, use the **no** form of this command.

mdt mtu *value*

Syntax Description

value	Specifies the MTU value and ranges between 401 to 65535. The configured mdt mtu value includes 24 bytes of GRE encapsulation.

Command Default

The MDT tunnel default size is 1376.

Command Modes

Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MTU of the multicast distribution tree:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf_A
RP/0/RSP0/CPU0:router(config-mcast-vrf_A-ipv4)# mdt mtu 2345
```

Related Commands

Command	Description
mdt data, on page 36	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt default, on page 39	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, on page 42	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt source

To configure the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address, use the **mdt source** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt source *type interface-path-id*

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 configuration

Multicast VRF configuration

Usage Guidelines

Use the **mdt source** command to identify the root of the multicast distribution tree in the service provider network. This address is used to update all MVPN peers through multiprotocol BGP.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the interface used to set the MDT source address:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# mdt source POS 0/1/0/0
```

Note Per VRF MDT Source is a new feature introduced in IOS XR Software Release 3.9.0 apart from the existing default MDT source. Each VRF can have its own MDT source interface co-existing with the default MDT source to achieve core diversity.

The following example shows how to configure a per VRF MDT source:

```
RP/0/RSP0/CPU0:router# configure
```

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4)# mdt source loopback0
RP/0/RSP0/CPU0:router(config-mcast)# vrf foo
RP/0/RSP0/CPU0:router(config-mcast-foo)# address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast-foo-ipv4)# mdt source loopback1 !
```

Related Commands

Command	Description
mdt data, on page 36	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt default, on page 39	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt mtu, on page 41	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).

mhost default-interface

To configure the default interface for IP multicast transmission and reception to and from the host stack, use the **mhost default-interface** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

mhost ipv4 default-interface *type interface-path-id*

Syntax Description

ipv4	Specifies IPv4 address prefixes.
ipv6	Specifies IPv6 address prefixes.
type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

If no Multicast Host (MHost) default interface is configured, an arbitrary interface is selected as the active MHost default.

If multicast routing feature is enabled, a multicast-enabled interface is always selected as the MHost default interface.

Command Modes

Global configuration

Global VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **mhost default-interface** command configures the interface that the automatic route processing (Auto-RP), ping, and mtrace applications use for multicast transmissions, and the interface to which multicast groups are joined for reception.

The ping and mtrace features may use the MHost default interface to process multicast messaging. When IP multicast routing is enabled, packets sent to the MHost default interface are switched on other interfaces with a matching forwarding state. In addition, an arbitrary interface may be chosen to be the active MHost default interface if the configured interface is not operational. If no MHost default interface is configured with this command, an arbitrary interface is selected as the active MHost default.

Note

- The MHost default interface must be configured explicitly (preferably use a loopback interface).
- If the MHost default interface is not configured explicitly, then the router picks an interface.
- If the router picked multicast interface happens to be an ASBR link (on an ASBR router) and if that interface is configured with multicast boundary, then it may not work as intended beacuse there is an IC (Internal Copy) flag on the interface and it has to accept all multicast packets on the interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure Loopback interface 1 as the default interface:

```
RP/0/RSP0/CPU0:router(config)# mhost ipv4 default-interface loopback 1
```

Related Commands

Command	Description
show mhost default-interface, on page 161	Displays the active default interface for the Multicast Host (MHost) process.

migration route-policy

To support PIM And BGP c-multicast joins over the same or different MDTs, use the **migration route-policy**command in the appropriate mode. To disable the migration, use the **no**form of the command.

migration route-policy *policy-name*

Syntax Description

policy-name	Name of the policy.

Command Default

None

Command Modes

C-multicast routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

The policy name is used to match the upstream PEs (nexthop) and send joins through BGP or PIM.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to use the **migration route-policy**command:

```
RP/0/RSP0/CPU0:router (config-pim-v1-ipv4-mdt-cmcast) # migration route-policy p1
```

multicast-routing

To enter multicast routing configuration mode, use the **multicast-routing** command in global
configuration mode. To return to the default behavior, use the **no** form of this command.

multicast-routing

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enter multicast routing configuration mode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)#
```

Related Commands

Command	Description
accounting per-prefix, on page 4	Enables per-prefix counters only in hardware.
alias	Creates a command alias.
interface (multicast), on page 27	Configures multicast interface properties.
interface all enable, on page 29	Enables multicast routing and forwarding on all new and existing interfaces.

multipath

To enable Protocol Independent Multicast (PIM) to divide the multicast load among several equal cost paths, use the **multipath** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

[**address-family ipv4**] **multipath** [**hash** {**source** | **source next-hop**}]

Syntax Description

hash	(Optional) Enables multipath hashing.
source	Enables source-based multipath hashing.
source-nexthop	(Optional) Enables source with next-hop hashing.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address-family ipv4

Multicast VRF configuration



Note Effective with IOS XR release 6.1.2 and later versions, **multipath** command is available only under the PIM configuration mode and not supported under the multicast routing configuration mode.

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

By default, equal-cost multipath (ECMP) paths are not load balanced. A single path from each unicast route is used for all multicast routes (which is the equivalent of the **no** form of the multipath command).

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multipath functionality for IOS XR release versions prior to 6.1.2.

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# multipath hash
```

Note Effective with IOS XR release 6.1.2 and later versions, the **multipath** command is available only under the PIM configuration mode and not supported under the multicast routing configuration mode.

This example shows how to enable multipath functionality for IOS XR release 6.1.2 and later versions.

```
RP/0/RSP0/CPU0:router(config)# router pim
RP/0/RSP0/CPU0:router(config-pim)# multipath hash
```

nsf (multicast)

To turn on the nonstop forwarding (NSF) capability for the multicast routing system, use the **nsf** command in multicast routing configuration mode. To turn off this function, use the **no** form of this command.

nsf [**lifetime** *seconds*]

Syntax Description

lifetime *seconds*	(Optional) Specifies the maximum time (in seconds) for NSF mode. Range is 30 to 3600.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family ipv4 configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **nsf** command does not enable or disable the multicast routing system, but just the NSF capability for all the relevant components. When the **no** form of this command is used, the NSF configuration is returned to its default disabled state.

Enable multicast NSF when you require enhanced availability of multicast forwarding. When enabled, failures of the control-plane multicast routing components Multicast Routing Information Base (MRIB) or Protocol Independent Multicast (PIM) will not cause multicast forwarding to stop. When these components fail or communication with the control plane is otherwise disrupted, existing Multicast Forwarding Information Base (MFIB) entries continue to forward packets until either the control plane recovers or the MFIB NSF timeout expires.

Enable multicast NSF when you upgrade control-plane Cisco IOS XR Software packages so that the live upgrade process does not interrupt forwarding.

When the MFIB partner processes enter NSF mode, forwarding on stale (nonupdated) MFIB entries continues as the control-plane components attempt to recover gracefully. Successful NSF recovery is signaled to the Multicast Forwarding Engine (MFWD) partner processes by MRIB. MRIB remains in NSF mode until Internet Group Management Protocol (IGMP) has recovered state from the network and host stack *and* until PIM has recovered state from the network and IGMP. When both PIM and IGMP have recovered and fully updated the MRIB, MRIB signals the MFIBs that NSF is ending, and begins updating the stale MFIB entries. When all updates have been sent, the MFWD partner processes delete all remaining stale MFIB entries and returns to normal operation, ending the NSF mode. MFIB NSF timeout prior to the signal from MRIB may cause NSF to end, and thus forwarding to stop.

When forwarding is in NSF mode, multicast flows may continue longer than necessary when network conditions change due to multicast routing protocols, unicast routing protocol reachability information, or local sender and receiver changes. The MFWD partner processes halt forwarding on stale MFIB entries when the potential for a multicast loop is detected by receipt of incoming data on a forwarding interface for the matching MFIB entry.

Note For NSF to operate successfully in your multicast network, you must also enable NSF for the unicast protocols (such as Intermediate System-to-Intermediate System [IS-IS], Open Shortest Path First [OSPF] and Border Gateway Protocol [BGP]) that PIM relies on for Reverse Path Forwarding (RPF) information. See the appropriate configuration modules to learn how to configure NSF for unicast protocols.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable NSF for the multicast routing system:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# nsf
```

Related Commands

Command	Description
nsf lifetime (IGMP)	Configures the maximum time for the NSF timeout value under IGMP.
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.
show igmp nsf	Displays the state of NSF operation in IGMP.
show mfib nsf	Displays the state of NSF operation for the MFIB line cards.
show mrib nsf, on page 173	Displays the state of NSF operation in the MRIB.
show pim nsf	Displays the state of NSF operation for PIM.

oom-handling

To enable the out-of-memory (OOM) functionality on multicast routing software components, use the **oom-handling** command in multicast routing configuration mode. To remove this functionality, use the **no** form of this command.

oom-handling

Syntax Description

This command has no keywords or arguments.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family ipv4 configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

When the **oom-handling** command is enabled, and the router memory is low or in a warning state, the following states are not created:

- Protocol Independent Multicast (PIM) route states in response to PIM join and prune messages, and register messages
- Internet Group Management Protocol (IGMP) group states
- External Source-Active (SA) states in Multicast Source Discovery Protocol (MSDP)

Multicast routing **show** commands such as the **show pim topology** command indicate when the router is running low on memory and that new state creation has stopped.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable the out-of-memory functionality:

```
RP/0/RSP0/CPU0:router# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# oom-handling
```

Related Commands

Command	Description
show pim topology	Displays PIM topology table information.

rate-per-route

To enable individual (source, group [S, G]) rate calculations, use the **rate-per-route** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

rate-per-route

Syntax Description

This command has no keywords or arguments.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family ipv4 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable individual route calculations:

```
RP/0/RSP0/CPU0:router# multicast-routing vrf vpn12 address-family ipv4
RP/0/RSP0/CPU0:router(config-mcast)# rate-per-route
```

Related Commands

Command	Description
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

recursive-fec

To enable the MLDP Recursive FEC support, use the **recursive-fec** command in the MPLS LDP MLDP sub configuration mode.

recursive-fec

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

MPLS LDP MLDP sub configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

```
RP/0/RSP0/CPU0:router(config)# mpls ldp
RP/0/RSP0/CPU0:router(config-ldp)# router-id 1.23.4.4
RP/0/RSP0/CPU0:router(config-ldp)# mldp
RP/0/RSP0/CPU0:router(config-ldp-mldp)# recursive-fec
```

retain route-target all

To accept or retain updates containing at least one route target for the specified bgp parameters, use the **retain route-target all** command in the BGP Address-family configuration mode. To disable this feature, use the **no** form of this command.

retain route-target all

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

BGP Address-family Configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

```
RP/0/RSP0/CPU0:router(config)# router bgp 100 RP/0/RSP0/CPU0:router(config-bgp)# bgp router-id
 10.10.10.10
RP/0/RSP0/CPU0:router(config-bgp)# address-family ipv4 mvpn
RP/0/RSP0/CPU0:router(config-bgp-af)# retain route-target all
```

route-policy

To apply route policy to a neighbor, either to inbound routes or outbound routes, use the **route-policy** command in the BGP neighbor address-family configuration mode. To disable this feature, use the **no** form of this command.

route-policy *policy_name* [**in** | **out**]

Syntax Description

policy-name	Specifies the name of the route policy.
in	Applies route policy to inbound routes.
out	Applies route policy to outbound routes.

Command Default

No default behavior or values

Command Modes

BGP Neighbor Address-family Configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read, write

```
RP/0/RSP0/CPU0:router(config-bgp-nbr)# address-family vpnv4 unicast
RP/0/RSP0/CPU0:router(config-bgp-nbr-af)# route-policy pass-all in
RP/0/RSP0/CPU0:router(config-bgp-nbr-af)# route-policy pass-all out
```

shared-tree-prune delay

To set or change the prune installation time, use the **shared-tree-prune-delay**command in the appropriate mode. To disable the set time, use the **no** form of the command.

shared-tree-prune-delay *time*

Syntax Description

time	Delay in seconds. Range is 0 to 1800.

Command Default

60 seconds (for upstream prune)

Command Modes

C-multicast-routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

This command is used to change the prune installation time(C-S, C-G, RPT). This is required on PEs connected to the C-RP (under certain conditions), when a Type-5 route is received. This is applicable only to BGP C-multicast Routing.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to use the **shared-tree-prune-delay** command:

```
RP/0/RSP0/CPU0:router (config-pim-v1-ipv4-mdt-cmcast) # shared-tree-prune-delay 100
```

show mfib bvi

To display the Bridge Virtual Interface (BVI) details in the Multicast Forwarding Information Base (MFIB), use the **show mfib bvi** command EXEC mode.

show mfib bvi [**interface** | **route**] **bvi** *bvi_number*

Syntax Description

interface	MFIB BVI interface.
route	BVI route entry.
bvi_number	BVI interface number. Range is from 1 to 65535.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 5.1.1	This command was introduced.
Release 7.1.1	IPv6 support was added on this command.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read

Example

This example shows how to run the **show mfib bvi** command:

```
RP/0/RSP0/CPU0:router # show mfib bvi route bvi 200
```

show mfib connections

To display the status of Multicast Forwarding Information Base (MFIB) connections to servers, use the **show mfib connections** command in the appropriate mode.

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **show mfib connections** command to display a list of servers connected to the MFIB and the status of the connections.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib connections** command:

```
RP/0/RSP0/CPU0:router# show mfib connections

Netio            : connected
IM               : connected
Pakman           : connected
MRIB             : connected
IFH              : connected
SysDB-Global     : connected
SysDB-Local      : connected
SysDB-NSF        : connected
SYSDB-EDM        : connected
SYSDB-Action     : connected
AIB              : connected
MLIB             : connected
IDB              : connected
IIR              : connected
```

```
IPARM              : connected
GSP                : connected
```

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib counter

To display Multicast Forwarding Information Base (MFIB) counter statistics for packets that have dropped, use the **show mfib counter** command in the appropriate mode.

show mfib [**vrf** *vrf-name*] **ipv4 counter** [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
location *node-id*	(Optional) Specifies MFIB counter statistics associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mfib counter** command displays packet drop statistics for packets that cannot be accounted for under route counters.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib counter** command:

```
RP/0/RSP0/CPU0:router# show mfib counter location 0/1/CPU0

MFIB global counters are :
* Packets [no input idb]                  : 0
* Packets [failed route lookup]           : 0
* Packets [Failed idb lookup]             : 0
* Packets [Mcast disabled on input I/F]   : 0
* Packets [encap drops due to ratelimit]  : 0
* Packets [MC disabled on input I/F (iarm nfn)]      : 0
```

This table describes the significant fields shown in the display.

Table 1: show mfib counter Field Descriptions

Field	Description
Packets [no input idb]	Packets dropped because no input interface information was found in the packet.

Field	Description
Packets [failed route lookup]	Packets dropped because of failure to match any multicast route.
Packets [Failed idb lookup]	Packets dropped because the descriptor block was not found for an interface (incoming or outgoing).
Packets [Mcast disabled on input I/F]	Packets dropped because arriving on an interface that was not enabled for the multicast routing feature.
Packets [encap drops due to ratelimit]	Packets dropped because of rate limit.

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib encap-info

To display the status of encapsulation information for Multicast Forwarding Information Base (MFIB), use the **show mfib encap-info** command in the appropriate mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **encap-info** [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib encap-info** command:

```
RP/0/RSP0/CPU0:router# show mfib vrf vrf_a encap-info


                  ----------------------------
Encaps String                       Dependent  Encaps      MDT Name/
                                    Routes #   Table ID    Handle

(192.168.5.203, 255.1.1.1)            5          0xe0000000  mdtA1 (0x100a480)
```

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware interface

To display hardware switching interface information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware interface** command in

EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware interface** [**detail**] [*type interface-path-id*] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Displays detailed information about the MFIB interface.
type	(Optional) Interface type. For more information, use the question mark (?) online help function.
interface-path-id	(Optional) Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mfib hardware interface** command displays multicast-specific information about the software switching interfaces of the router hardware. This command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware interface** command.

```
RP/0/RSP0/CPU0:router# show mfib hardware interface location 0/0/CPU0

LC Type: Trident
------------------------------------------------------------------
Interface       Handle     RefCnt TTL Routes uIDB  Enbld Comment
------------------------------------------------------------------
Gi0/0/0/4       0x180      5      0   2      5     True   success
Gi0/0/0/5       0x1c0      27     0   0      6     True   success
Gi0/0/0/6       0x200      5      0   2      7     True   success
Gi0/0/0/7       0x240      25     0   0      8     True   success
Gi0/0/0/8       0x280      30     0   2      9     True   success
------------------------------------------------------------------
ROUTE INFORMATION:
Legend:
 S: Source, G: Group, P: Prefix length, PI: Packets cn, PO: packets out,
 RF: RPF failures, TF: TTL failures, OF: OLIST failures, F: Other failures
Route flags - (Ingress)
 C: Chip ID, IC: BACL check, IP: Punt this packet to LC CPU,
 ID: Directly connected, IS: RPF interface signal, IU: Punt copy to RP,
 IF: Punt to LC CPU if forwarded, IM: Result match, IV: Valid entry,
 IR: RPF IF, IA: Fabric slotmask, IG: Mulicast group ID
Route flags - (Egress)
 ET: Table ID to be used for OLIST lookup, EO: OLIST count bit,
 ER: Route MGID to be used for OLIST/NRPF lookup, EM: Result match,
 EV: Valid entry, EC: Count of OLIST members on this chip,
 BS: Base of the statistics pointer

Interface: Gi0/0/0/4

  S:4.0.0.2 G:227.0.0.1 P:32 PI:1 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------------
  0  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  1  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  2  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  3  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 1  T  6    T  T  3    0x555c2
  ------------------------------------------------------------------------------------

  S:0.0.0.0 G:227.0.0.1 P:32 PI:4 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------------
  0  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  1  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  2  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  3  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 1  T  5    T  T  3    0x555bd
  ------------------------------------------------------------------------------------

Interface: Gi0/0/0/5
  This interface is not part of the olist of any route

Interface: Gi0/0/0/6

  S:4.0.0.2 G:227.0.0.1 P:32 PI:1 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------------
  0  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  1  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  2  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
```

```
  3  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 1  T  6    T  T  3    0x555c2
  ------------------------------------------------------------------------------

  S:0.0.0.0 G:227.0.0.1 P:32 PI:4 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  1  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  2  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  3  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 1  T  5    T  T  3    0x555bd
  ------------------------------------------------------------------------------

Interface: Gi0/0/0/7
  This interface is not part of the olist of any route

Interface: Gi0/0/0/8

  S:4.0.0.2 G:227.0.0.1 P:32 PI:1 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  1  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  2  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 0  F  6    T  T  0    0x5518a
  3  F  F  F  F  F  F  T  T  0x180      0x1    0x8006 1  T  6    T  T  3    0x555c2
  ------------------------------------------------------------------------------

  S:0.0.0.0 G:227.0.0.1 P:32 PI:4 PO:0 RF:0 TF:0 OF:0 F:0
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  1  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  2  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  3  F  F  T  F  F  F  T  T  0x0        0x1    0x8004 1  T  5    T  T  3    0x555bd
  ------------------------------------------------------------------------------
```

The following example shows a sample output for **show mfib hardware interface** command on the Cisco ASR 9000 Series SIP-700 line card:

```
RP/0/RSP0/CPU0:router# show mfib hardware interface serial 0/4/0/0/1 location 0/4/CPU0

LC Type: A9K-SIP-700

Hardware Interface Information
------------------------------------------------------------
Interface  Handle     Type  TTL Number of Routes Multicast Enabled Num bundles
------------------------------------------------------------
Se0/4/0/0/1 0xc000ec0  0      0   2                       True            0

------------------------------------------------------------

Header      : IDB Route Information
Source      : Source address
Group       : Group Address
M           : Mask Length
PI          : Packets in
PO          : Packets out
RF          : RPF failures
TF          : TTL failures
OF          : OLIST failures
F           : Other failures
```

```
C           : Directly connected check flag
RPF         : Accepting interface for non-bidir entries
S           : Signal if packet arrived on RPF interface
IC          : Aggregated Internal copy flag
PR          : Punt to RP flag for Internal copy in the Loopback interface
PK          : PEEK flag
FGID        : Fabric Group ID
MGID        : Multicast Group ID

Interface: Se0/4/0/0/1

Source: 12.12.12.2 Group: 225.0.0.0 M: 64 PI: 1 PO: 0 RF: 0 TF: 0 OF: 0 F: 0
C: F RPF: Se0/4/0/0/1 S: F IC: F PR: F PK: F FGID: 64 MGID: 17024

Ingress CPP Prefix Information
------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbcfb0, Flags: 0 First leaf: 9dcbccfc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900200

Egress CPP Prefix Information
------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbcfb0, Flags: 0 First leaf: 9dcbccfc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80200

Route OCE Entry Information
------------------------------------------------------

**** Leaf Info (in cp) : [9dcbccfc]
 oce flags = 0x2 next obj type : 11 next obj handle : a73e9104
 **** Leaf Info (in cpp): [0]
 leaf_flags= 0x1 oce_flags: 0  oce_ptr: 0x8c5800c0

Source: 0.0.0.0 Group: 225.0.0.0 M: 32 PI: 1 PO: 0 RF: 0 TF: 0 OF: 0 F: 0
C: T RPF: Se0/4/0/0/1 S: F IC: F PR: F PK: F FGID: 64 MGID: 17013

Ingress CPP Prefix Information
------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbd530, Flags: 2 First leaf: 9dcbd9bc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900080

Egress CPP Prefix Information
------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbd530, Flags: 2 First leaf: 9dcbd9bc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80080

Route OCE Entry Information
------------------------------------------------------
```

```
**** Leaf Info (in cp) : [9dcbd9bc]
 oce flags = 0x6 next obj type : 11 next obj handle : a73e9104
 **** Leaf Info (in cpp): [0]
 leaf_flags= 0x1 oce_flags: 0  oce_ptr: 0x8c5800c0
```

This table describes the significant fields shown in the display.

Table 2: show mfib hardware interface Field Descriptions

Field	Description
Interface	MFIB interface name.
Handle	A 32-bit system-wide identifier of the MFIB interface.
RefCnt	Number of times various data structures referred to this MFIB interface structure.
TTL	Multicast time-to-live threshold that was configured on this MFIB interface.
Routes	The number of routes that include this interface as a member.
uIDB	The ucode Interface Descriptor Block index.
Enbld	If true, multicast is enabled on the MFIB interface.
Comment	Indicates whether there were problems when reading hardware information.

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.

show mfib hardware ltrace

To display IP Multicast platform specific trace information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware ltrace** command in

EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware ltrace** [**error** | **event** | **frequent-event** | **hexdump** | **init** | **last** | **netio** | **reverse** | **stats** | **tailf** | **unique** | **verbose** | **wrapping**] **file** *file-name* **location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
error	(Optional) Displays error events.
event	(Optional) Displays non-frequent events.
frequent-event	(Optional) Displays frequent events.
hexdump	(Optional) Displays traces in hexadecimal ouput.
init	(Optional) Displays initiation and configuration events.
last	(Optional) Displays the last n entries.
netio	(Optional) Displays the netio events.
reverse	(Optional) Displays the traces in the reverse order starting with the latest events.
stats	(Optional) Displays the statistics.
tailf	(Optional) Displays the new traces as they are added.
unique	(Optional) Displays the unique entries with the counts.
verbose	(Optional) Displays the internal debugging information.
wrapping	(Optional) Displays the wrapping entries.
file *file-name*	(Optional) Specifies the file name.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines



Note This command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware ltrace** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware ltrace error location 0/1/cpu

3079 wrapping entries (4096 possible, 0 filtered, 4242 total)
May 21 01:45:32.865 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
May 21 01:45:32.877 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f2
May 21 01:58:37.019 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
May 21 01:58:37.019 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f2
May 21 02:15:38.620 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
May 21 02:15:38.620 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f2
May 21 02:26:06.440 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
May 21 02:26:06.440 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f2
May 21 03:11:18.805 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
May 21 03:11:18.805 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f2
May 21 03:36:31.240 ipmcast/error 0/1/CPU0 t1  Traffic Loss msg rxed, Null Route
, cntid=0x705f0
```

The following is a sample output for the **show mfib hardware ltrace** command on the Cisco ASR 9000 Series SIP-700 line card:

```
RP/0/RSP0/CPU0:router# show mfib hardware ltrace location 0/4/CPU0

438 wrapping entries (88064 possible, 0 filtered, 438 total)
Aug 25 00:22:02.978 mfwd_ipv4_hw/init 0/4/CPU0 t1  ===>> Proc started jid=199, pid=163944
Aug 25 00:22:02.978 mfwd_ipv4_hw/event 0/4/CPU0 t1  ===>> Proc started jid=199, pid=163944
Aug 25 00:22:02.978 mfwd_ipv4_hw/error 0/4/CPU0 t1  ===>> Proc started jid=199, pid=163944
Aug 25 00:22:02.978 mfwd_ipv4_hw/fevent 0/4/CPU0 t1  ===>> Proc started jid=199, pid=163944
Aug 25 00:22:02.978 mfwd_ipv4_hw/netio 0/4/CPU0 t1  ===>> Proc started jid=199, pid=163944
Aug 25 00:22:03.001 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib initializiation started
Aug 25 00:22:03.001 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully got shared memory window
header
```

```
Aug 25 00:22:03.001 mfwd_ipv4_hw/init 0/4/CPU0 t1  Platform extension does not exist - cold
 boot
Aug 25 00:22:03.042 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC Gtrie Lib Init done: rc=0
Aug 25 00:22:03.075 mfwd_ipv4_hw/init 0/4/CPU0 t1  Library not initialized previously,
establishing connections
Aug 25 00:22:23.990 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC PAL Lib Init done: rc=0
Aug 25 00:22:24.851 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC iox Init done: rc=0
Aug 25 00:22:24.852 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully initiated thread ctx and
API ctx
Aug 25 00:22:24.871 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully done binding with CPP GIC
Server
Aug 25 00:22:24.898 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully done binding with CPP GIC
Server
Aug 25 00:22:24.902 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Rx Adjacency
 APIs Lib
Aug 25 00:22:24.904 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Tx Adjacency
 APIs Lib
Aug 25 00:22:24.906 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Tx Adjacency
 APIs Lib
Aug 25 00:22:24.906 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized interface lib
Aug 25 00:22:24.979 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized EDM backend
Aug 25 00:22:24.999 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized utilities lib
Aug 25 00:22:25.000 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib initializiation
completed
Aug 25 00:22:26.046 mfwd_ipv4_hw/event 0/4/CPU0 t1  table: table id -536870912 vrf id
1610612736 got created/commit table_ext 0x9dc89c10
Aug 25 00:22:26.098 mfwd_ipv4_hw/init 0/4/CPU0 t1  gtrie: Platform gtrie lib init started
Aug 25 00:22:26.099 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC gtrie init done prot=2 tab=0
rc=0
Aug 25 00:22:26.099 mfwd_ipv4_hw/init 0/4/CPU0 t1  gtrie: successfully initiated gtrie
0xa6039dec for protocol 0, table id 0, use shmem 1, shmem id 1
Aug 25 00:23:00.459 mfwd_ipv4_hw/event 0/4/CPU0 t1  CPP Create adj cpp 1 adj handle 0xa73e907c
 ifh 91 link 1 enctype 0 flags 1 hw addr 0x8c580000
Aug 25 00:24:25.780 mfwd_ipv4_hw/event 0/4/CPU0 t1  CPP Create adj cpp 1 adj handle 0xa73e90c0
 ifh 98 link 1 enctype 0 flags 1 hw addr 0x8c580010
Aug 25 21:43:52.966 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib terminate started,
terminate reason 2
Aug 25 21:43:52.982 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib terminate completed
Aug 25 21:43:55.783 mfwd_ipv4_hw/fevent 0/4/CPU0 t1  ===>> Proc started jid=199, pid=217192
Aug 25 21:43:55.783 mfwd_ipv4_hw/netio 0/4/CPU0 t1  ===>> Proc started jid=199, pid=217192
Aug 25 21:43:55.783 mfwd_ipv4_hw/error 0/4/CPU0 t1  ===>> Proc started jid=199, pid=217192
Aug 25 21:43:55.783 mfwd_ipv4_hw/event 0/4/CPU0 t1  ===>> Proc started jid=199, pid=217192
Aug 25 21:43:55.783 mfwd_ipv4_hw/init 0/4/CPU0 t1  ===>> Proc started jid=199, pid=217192
Aug 25 21:43:55.784 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib initializiation started
Aug 25 21:43:55.784 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully got shared memory window
header
Aug 25 21:43:55.784 mfwd_ipv4_hw/init 0/4/CPU0 t1  Platform extension exists - warm boot
Aug 25 21:43:55.785 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC Gtrie Lib Init done: rc=0
Aug 25 21:43:55.797 mfwd_ipv4_hw/init 0/4/CPU0 t1  gtrie: Platform gtrie lib re-init started
 for gtrie 0xa6039dec, shmem id 1
Aug 25 21:43:55.797 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC gtrie re init done prot=2 tab=0
 rc=0
Aug 25 21:43:55.797 mfwd_ipv4_hw/init 0/4/CPU0 t1  gtrie: successfully re-initiated gtrie
0xa6039dec for protocol 0, table id 0, use shmem 1, shmem id 1
Aug 25 21:43:55.826 mfwd_ipv4_hw/init 0/4/CPU0 t1  Library not initialized previously,
establishing connections
Aug 25 21:43:56.241 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC PAL Lib Init done: rc=0
Aug 25 21:43:56.422 mfwd_ipv4_hw/init 0/4/CPU0 t1  CPP IPMC iox Init done: rc=0
Aug 25 21:43:56.423 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully initiated thread ctx and
API ctx
Aug 25 21:43:56.431 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully done binding with CPP GIC
Server
Aug 25 21:43:56.442 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully done binding with CPP GIC
Server
```

```
Aug 25 21:43:56.444 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Rx Adjacency
 APIs Lib
Aug 25 21:43:56.445 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Tx Adjacency
 APIs Lib
Aug 25 21:43:56.445 mfwd_ipv4_hw/init 0/4/CPU0 t1  Successfully binded with CPP Tx Adjacency
 APIs Lib
Aug 25 21:43:56.445 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized interface lib
Aug 25 21:43:56.464 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized EDM backend
Aug 25 21:43:56.466 mfwd_ipv4_hw/init 0/4/CPU0 t1  Initialized utilities lib
Aug 25 21:43:56.471 mfwd_ipv4_hw/init 0/4/CPU0 t1  MFWD: Platform lib initializiation
completed
Aug 25 21:43:58.412 mfwd_ipv4_hw/event 0/4/CPU0 t1  CPP Modify adj cpp 1 adj handle 0xa73e907c
 ifh 91 link 1 enctype 0 flags 1 hw addr 0x8c580000
Aug 25 21:43:58.412 mfwd_ipv4_hw/event 0/4/CPU0 t1  CPP Modify adj cpp 1 adj handle 0xa73e90c0
 ifh 98 link 1 enctype 0 flags 1 hw addr 0x8c580010
Aug 26 22:25:50.253 mfwd_ipv4_hw/error 0/4/CPU0 t1  ===>> Proc started jid=227, pid=163930
Aug 26 22:25:50.253 mfwd_ipv4_hw/netio 0/4/CPU0 t1  ===>> Proc started jid=227, pid=163930
Aug 26 22:25:50.253 mfwd_ipv4_hw/fevent 0/4/CPU0 t1  ===>> Proc started jid=227, pid=163930
Aug 26 22:25:50.253 mfwd_ipv4_hw/event 0/4/CPU0 t1  ===>> Proc started jid=227, pid=163930
```

show mfib platform interface

To display hardware switching interface information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib platform interface** command in

EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform interface** [**detail**] [*type interface-path-id*] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Displays detailed information about the MFIB interface.
type	(Optional) Interface type. For more information, use the question mark (?) online help function.
interface-path-id	(Optional) Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware interface** command.

Usage Guidelines

The **show mfib platform interface** command displays multicast-specific information about the software switching interfaces of the router hardware. This command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is detailed output from the **show mfib platform interface** command.

```
RP/0/RSP0/CPU0:router# show mfib platform interface detail location 0/3/CPU0

LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Interface       Handle     RefCnt TTL Routes uIDB  Enbld Comment
------------------------------------------------------------------------------
Te0/3/0/3/2     0x60014c0  6      0   2      13    True   success
------------------------------------------------------------------------------
Interface       Primary IP         Secondary IP         UidbIdx   BndInt    BndCnt
------------------------------------------------------------------------------
Te0/3/0/3/2     Unknown            Unknown                13         F          0
------------------------------------------------------------------------------
Legend:
Common SW:
Route Information
    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            FS:   Fabric slotmask
    G:    Multicast group ID       M:    Multicast Leaf Index
    T:    Table ID for lookup      OC:   Count of OLIST members
    Base: Base of the statistics pointer NI:   Not Installed
    BD:   Bidir

    P:    Prefix length            PI:   Packets in
    PO:   Packets out              RF:   RPF failures
    TF:   TTL failures             OF:   OLIST failures
    F:    Other failures           BMC:  Bundle Member Count
------------------------------------------------------------------------------


Interface: Te0/3/0/3/2

  Source: 23.1.1.2            Group: 225.0.0.1           Prefix: 32
  PI:0  PO:8  RF:0  TF:0  OF:0  F:0
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR RI         FS     G      M      T  OC Base     BMC
  ------------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  0x1        0x8    16990  97     0  0  0xc68c9a 0
  1  F  F  F  F  F  F  F  0x1        0x8    16990  97     1  1  0xc6925d 0
  2  F  F  F  F  F  F  F  0x1        0x8    16990  97     0  0  0xc68c9a 0
  3  F  F  F  F  F  F  F  0x1        0x8    16990  97     0  0  0xc68c9a 0
  ------------------------------------------------------------------------------

  Source: 0.0.0.0             Group: 225.0.0.1           Prefix: 32
  PI:0  PO:0  RF:0  TF:0  OF:0  F:0
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR RI         FS     G      M      T  OC Base     BMC
  ------------------------------------------------------------------------------
  0  F  T  T  F  F  F  F  0x80006e0  0x8    16988  95     0  0  0xc68c90 0
  1  F  T  T  F  F  F  F  0x80006e0  0x8    16988  95     1  1  0xc69239 0
  2  F  T  T  F  F  F  F  0x80006e0  0x8    16988  95     0  0  0xc68c90 0
  3  F  T  T  F  F  F  F  0x80006e0  0x8    16988  95     0  0  0xc68c90 0
  ------------------------------------------------------------------------------
```

The following example shows a sample output for **show mfib platform interface** command:

```
RP/0/RSP0/CPU0:router# show mfib platform interface location 0/3/CPU0
!! File saved at 15:27:04 EST Wed Feb 14 2018 by root
```

```
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Interface       Handle     RefCnt TTL Routes uIDB  Enbld Comment
------------------------------------------------------------------------------
Te0/3/0/3/2     0x60014c0  6      0   2      13    True   success
------------------------------------------------------------------------------
Legend:
Common SW:
Route Information
    B:    BACL check               S:    RPF Interface signal
    DC:   Directly connected       PL:   Punt to LC CPU
    PR:   Punt to RP               PF:   Punt if forwarded
    DR:   Drop all                 RI:   RPF interface
    FS:   Fabric slotmask          G:    Multicast group ID
    M:    Multicast leaf index     NI:   Not Installed
    BD:   Bidir

    P:    Prefix length            PI:   Packets in
    PO:   Packets out              RF:   RPF failures
    TF:   TTL failures             OF:   OLIST failures
    F:    Other failures           BMC:  Bundle Member Count
------------------------------------------------------------------------------


Interface: Te0/3/0/3/2

  Source: 23.1.1.2            Group: 225.0.0.1           Prefix: 32
  PI:0  PO:8  RF:0  TF:0  OF:0  F:0
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR RI         FS     G      M      BMC
  ------------------------------------------------------------------
  F  F  F  F  F  F  F  0x1        0x8    16990  97     0
  ------------------------------------------------------------------------------

  Source: 0.0.0.0             Group: 225.0.0.1           Prefix: 32
  PI:0  PO:0  RF:0  TF:0  OF:0  F:0
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR RI         FS     G      M      BMC
  ------------------------------------------------------------------
  F  T  T  F  F  F  F  0x80006e0  0x8    16988  95     0
  ------------------------------------------------------------------------------
```

Table 3: show mfib platform interface Field Descriptions

Field	Description
Interface	MFIB interface name.
Handle	A 32-bit system-wide identifier of the MFIB interface.
RefCnt	Number of times various data structures referred to this MFIB interface structure.
TTL	Multicast time-to-live threshold that was configured on this MFIB interface.
uIDB	MicroIDB. A unique identifier of the MFIB interface that exists on the line card.
Parent-I/F	Parent interface handle. Relevant only for bundles and tunnels showing the corresponding parent MFIB interface handle.
Enbld	If true, multicast is enabled on the MFIB interface.

Field	Description
Primary IP	Primary IP address of the MFIB interface.
Secondary IP	Secondary IP address of the MFIB interface.
Bound-ACL	The following states appear for this field: • True if the multicast boundary is configured on the MFIB interface. • False if no boundary is configured. • Unknown if the MFIB interface is not applicable to multicast boundaries.
Comment	Indicates whether there were problems when reading hardware information.

show mfib hardware resource-counters

To display the allocated and freed hardware resources for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware resource-counters** command in EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware resource-counters location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **show mfib hardware resource-counters** command to understand the table lookup unit (TLU) resource usage by MFIB.

- Usage for each channel
- Storing of specific data
- Allocation counts for metro statistics
- Failure counts for metro statistics

Note Use the location option in the **show mfib hardware resource-counters** command to indicate for which linecard you need information. The command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mfib hardware resource-counters** command on the Cisco ASR 9000 Series SIP-700 line card:

```
RP/0/RSP0/CPU0:router# show mfib hardware resource-counters location 0/4/CPU0
```

```
LC Type: A9K-SIP-700

PD Memory Alloc/Free/In Use Stats:

-------------------------------------------------------
   Type                  Allocated     Freed    In Use
-------------------------------------------------------
global                           0         0         0
table extension                  1         0         1
route extension                 18        11         7
interface extension             18        10         8
idb extension                    3         0         3
EDM bag data                    26        24         2
vpn extension                    0         0         0
mdt ea extension                 0         0         0
-------------------------------------------------------

Ingress Hardware Resource Counters:
-------------------------------------------------------
   Type                  Allocated     Freed    In Use
-------------------------------------------------------
prefix stats resource           18        11         7
PLU prefix resource             18        11         7
prefix replica resource          0         0         0
-------------------------------------------------------

Egress Hardware Resource Counters:
-------------------------------------------------------
   Type                  Allocated     Freed    In Use
-------------------------------------------------------
prefix stats resource           18        11         7
PLU prefix resource             18        11         7
prefix replica resource         21        12         9
-------------------------------------------------------

Ingress Hardware Global Multicast Statistics:
-------------------------------------------------------
Punt Packets:                    3
Punt Drop Packets:               0
Inject Packets:                  0
Inject Drop Packets:             0
Drop Packets/Bytes:              0/0
-------------------------------------------------------

Egress Hardware Global Multicast Statistics:
-------------------------------------------------------
Punt Packets:                    0
Punt Drop Packets:               0
Inject Packets:                  0
Inject Drop Packets:             0
Drop Packets/Bytes:              0/0
-------------------------------------------------------
```

The following is a sample out put of **show mfib hardware resource-counters** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware resource-counters location 0/0/CPU0

LC Type: Trident
prm_stat success calls: ingress: 4250,4092       egress: 0,0
prm_stat failure calls: ingress: 0,0     egress: 0,0

Memory alloc stats
-------------------------------------------------------
   Type              Allocated     Freed     Delta
```

```
-----------------------------------------------------
global                          0         0         0
table extension                 0         0         0
route extension               187       180         7
interface extension           221       215         6
idb extension                  52        47         5
kmrs                          159       159         0
kmrs key                      652       652         0
kmrs result                   488       488         0
uidb data                     437       437         0
EDM bag data                    5         3         2
-----------------------------------------------------
```

This table describes the significant fields shown in the display.

Table 4: show mfib hardware resource counters Field Descriptions

Field	Description
prm_stat success calls	The number of successful calls to allocate and free statistics blocks, for ingress and egress statistics.
prm_stat failure calls	The number of failed calls to allocate and free statistics blocks, for ingress and egress statistics.
Type	Describes the structure type.
Allocated	The number of blocks allocated per structure type.
Freed	The number of blocks freed per structure type.
Delta	The difference between allocated and freed blocks per structure type.

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.

show mfib hardware route accept-bitmap

To display platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes, use the **show mfib hardware route accept-bitmap** command in EXEC mode .

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route accept-bitmap** [*****] [*group-address* [*/prefix-length*]] [**detail**] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*	(Optional) Displays shared tree entry.
source-address	(Optional) IP address or hostname of the multicast route source:
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Detailed list of the routing database.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route accept-bitmap** command:

```
RP/0RSP0/CPU0:RTP-VIKING-MCAST-04#show mfib hardware route accept-bitmap detail 227.0.0.0/8
 location 0/2/cPU0

LC Type: A9K-MOD80-SE
------------------------------------------------------------------------------
Source: *               Group: 227.0.0.0       Mask: 8   RPF Int: None

 Accept bitmap summary (HW)
 ------------------------------------------------------
  NP  IIF Count  Row Count
 ------------------------------------------------------
   0          2          1
   1          2          1
 ------------------------------------------------------

 IIFs in Accept bitmap (HW)
 ------------------------------------------------------
  NP: 0
 ------------------------------------------------------
  Interface            Ifhandle   uIDB
 ------------------------------------------------------
  GigabitEthernet0/2/0/16 0x080004c0 17
  GigabitEthernet0/2/0/17 0x08000500 18
 ------------------------------------------------------
  NP: 1
 ------------------------------------------------------
  Interface            Ifhandle   uIDB
 ------------------------------------------------------
  GigabitEthernet0/2/0/16 0x080004c0 17
  GigabitEthernet0/2/0/17 0x08000500 18
 ------------------------------------------------------
 ------------------------------------------------------

 Raw Accept bitmap (HW)
 ------------------------------------------------------
  NP: 0  [Parent MLI: 305]
 ------------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------------
  0x0000 2     00000600 00000000 00000000 00000000
 ------------------------------------------------------
  NP: 1  [Parent MLI: 305]
 ------------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------------
  0x0000 2     00000600 00000000 00000000 00000000
 ------------------------------------------------------
```

Related Commands

Command	Description
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.

show mfib hardware route internallogical

To display the route internal structures for the platform-specific Multicast Forwarding Information Base (MFIB) in the hardware, use the **show mfib hardware route internal show mfib hardware route logical** command in

EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route internal logical** [*****] [*source-address*] [*group-address* [/ *prefix-length*]] [**detail**] [**location** *node-id*]

Syntax Description

*****	(Optional) Displays shared tree entries.
A.B.C.D	(Optional) Source IP address or hostname of the MFIB route.
A.B.C.D/length	(Optional) Group IP address or hostname of the MFIB route and the prefix length. Prefix length of the MFIB group address is a decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Details of each route (requires 140 columns).
location *node-id*	(Optional) Specifies the MFIB location.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.1	This command was introduced.
Release 5.2.0	This command was changed from show mfib hardware route internal to show mfib hardware route logical.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of the **show mfib hardware route internal show mfib hardware route logical** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware route internal detail location 0/1/CPU0

LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route Information - (Ingress)
 NP: Network Processor, IC: BACL check, IP: Punt this packet to LC CPU,
 ID: Directly connected, IS: RPF interface signal, IU: Punt copy to RP,
 IF: Punt to LC CPU if forwarded, IM: Result match, IV: Valid entry,
 IR: RPF IF, IA: Fabric slotmask, IG: Multicast group ID
Route Information - (Egress)
 ET: Table ID to be used for OLIST lookup, EO: OLIST count bit,
 ER: Route MGID to be used for OLIST/NRPF lookup, EM: Result match,
 EV: Valid entry, EC: Count of OLIST members on this chip,
 BS: Base of the statistics pointer
Route Information - (MDT)
 TU: Tunnel Route, TE: Tunnel Encap, TD: Tunnel Decap,
 CD: Conditional Decap, MI: MVET Index
MDT Encap Information
 NP: Network Processor, UC: Use Customer ToS,
 Csum: IP Checksum, TID: Table ID, UIDB: Tunnnel UIDB,
 T-ifh: Tunnel Interface Handle, StatP: Tunnnel Stat Ptr,
 CMG: Core Route Multicast Group ID, TMTU: Tunnnel MTU
Software Route Information (PD)
 T: Tunnel Route, E: Encap, D: Decap, CD: Conditional Decap,
 MVET-ID: MDT Encap Table ID, MVD: MVET Entry Dirty,
 TUS: Tunnel UIDB Set, TID: Table ID, UIDB: Tunnnel UIDB
 TMTU: Tunnnel MTU
------------------------------------------------------------------------------
Source: *               Group: 224.0.0.0       Mask length: 4   RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R            A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F T T F F F T T 0x0        0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  1  T F T T F F F T T 0x0        0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  2  T F T T F F F T T 0x0        0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  3  T F T T F F F T T 0x0        0x0    0x8080 0 F 3    T T 0    0x3640f  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 224.0.0.0       Mask length: 24  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R            A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F
  1  T F F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F
```

```
  2  T F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F
  3  T F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 224.0.1.39      Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  1  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  2  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  3  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 224.0.1.40      Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  1  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  2  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  3  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 232.0.0.0       Mask length: 8   RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  1  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  2  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  3  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F

  Software Route Information (PD)
```

```
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.0.0      Mask length: 16  RPF Int: Gi0/1/

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  1  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  2  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  3  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.60.60    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  1  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  2  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  3  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.62.62    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  1  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  2  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  3  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
```

```
  ------------------------------------------------------------

Source: *               Group: 239.60.64.64    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F
  1  T F F F F F T T 0x0        0x2    0x8082 1 T 8    T T 1    0x36428  F F F
  2  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F
  3  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.66.66    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F
  1  T F F F F F T T 0x0        0x2    0x8083 1 T 9    T T 1    0x3642d  F F F
  2  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F
  3  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------


RP/0/RSP0/CPU0:RTP-VIKING-MCAST-04#show mfib hardware route logical detail location 0/2/cPU0

LC Type: A9K-MOD80-SE
------------------------------------------------------------------------------
Legend:
Route Information
    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            T:    Table ID for lookup
    OC:   Count of OLIST members   MF:   MoFRR enabled
    TR:   Tunnel Route             TE:   Tunnel Encap
    TD:   Tunnel Decap             CD:   Conditional Decap
    MI:   MVET index               Base: Base of the statistics pointer
    NI:   Not Installed            BD:   Bidir

MVPN Information
    MLI:   MVPN table index        VTID:  VRF Table ID
    RPFID: RPF Identifier          TUS:   Tunnel uIDB set
```

```
    MVD:   MVET entry dirty        NP:    NP ID
    TStat: Tunnel stat pointer     TUIDB: Tunnel uIDB
    TIFH:  Tunnel Interface handle

MoFRR Information
    MLI:  Multicast leaf index     A:    Active RPF interface
    RI:   RPF interface (or RPF ID) WDI:  Watchdog counter index
------------------------------------------------------------------------------

Source: *               Group: 224.0.0.0       Mask: 24  RPF Int: None
 MGID: 17161     MLI: 288       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5302e3
  1  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5300fc
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17161 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 224.0.1.39      Mask: 32  RPF Int: None
 MGID: 17159     MLI: 286       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5302d9
  1  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5300f2
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17159 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 224.0.1.40      Mask: 32  RPF Int: None
 MGID: 17160     MLI: 287       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5302de
  1  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5300f7
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17160 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 227.0.0.0       Mask: 8   RPF Int: None
 MGID: 17178     MLI: 305       Fabric Slotmask: 0x10      FGID: 0x10
 Parent MLI: 305       IIF Count: 2         AB Rows: 1
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  T  0x0        1  1    F  F  F  F  F  0x0  0x5302ed
  1  F  F  F  F  F  F  F  T  0x0        0  0    F  F  F  F  F  0x0  0x530106
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
```

```
  MGID: 17178 Mask: 0x1  Old MGID: 0 Old Mask: 0x1
  ------------------------------------------------
Source: *               Group: 232.0.0.0       Mask: 8   RPF Int: None
 MGID: 17162     MLI: 289       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5302e8
  1  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x530101
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------
  MGID: 17162 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------
RP/0/RSP0/CPU0:RTP-VIKING-MCAST-04#
```

show mfib hardware route location

To display the platform-specific Multicast Forwarding Information Base (MFIB)-enabled location in the hardware, use the **show mfib hardware route location** command in

EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] [*****] [*source-address*] [*group-address* [*/prefix-length*]] **location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
	(Optional) Displays shared tree entry.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
node-id	Node ID for an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route location** command:

```
RP/0/RSP0CPU0:RTP-VIKING-MCAST-04#show mfib hardware route detail 227.0.0.0/8 location
0/2/cPU0

LC Type: A9K-MOD80-SE
------------------------------------------------------------------------------
Legend:
Route Information
    NP:   NP ID                     B:    BACL check
    S:    RPF Interface signal      DC:   Directly connected
    PL:   Punt to LC CPU            PR:   Punt to RP
    PF:   Punt if forwarded         DR:   Drop all
    RI:   RPF interface             T:    Table ID for lookup
    OC:   Count of OLIST members    MF:   MoFRR enabled
    TR:   Tunnel Route              TE:   Tunnel Encap
    TD:   Tunnel Decap              CD:   Conditional Decap
    MI:   MVET index                Base: Base of the statistics pointer
    NI:   Not Installed             BD:   Bidir

MVPN Information
    MLI:   MVPN table index         VTID:  VRF Table ID
    RPFID: RPF Identifier           TUS:   Tunnel uIDB set
    MVD:   MVET entry dirty         NP:    NP ID
    TStat: Tunnel stat pointer      TUIDB: Tunnel uIDB
    TIFH:  Tunnel Interface handle

MoFRR Information
    MLI:  Multicast leaf index      A:    Active RPF interface
    RI:   RPF interface (or RPF ID) WDI:  Watchdog counter index
------------------------------------------------------------------------------

Source: *               Group: 227.0.0.0       Mask: 8   RPF Int: None
 MGID: 17178     MLI: 305       Fabric Slotmask: 0x10      FGID: 0x10
 Parent MLI: 305       IIF Count: 2         AB Rows: 1
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  T  0x0        0  1    F  F  F  F  F  0x0  0x5302ed
  1  F  F  F  F  F  F  F  T  0x0        0  0    F  F  F  F  F  0x0  0x530106
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17178 Mask: 0x1  Old MGID: 0 Old Mask: 0x1
  ------------------------------------------------------
```

Related Commands

Command	Description
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route mofrr

To display the platform-specific Multicast Forwarding Information Base (MFIB) information for the MoFRR (multicast only fast reroute)- enabled list stored in the hardware, use the **show mfib hardware route mofrr** command in

EXEC mode

.

show mfib hardware route mofrr {[*****] | [*source-address*] [*group-address* [*/prefix-length*]] [**detail**]} [**location** *node-id*]

Syntax Description

*****	(Optional) Displays all the MoFRR routes configured in the platform.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
detail	(Optional) Displays a detailed list of the MoFRR routing database.
location *node-id*	Specifies the Node ID for an MFIB-designated node.

Command Default

IPv4 addressing is the default. Currently, MoFRR supports only IPv4 routes.

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

MoFRR is a mechanism in which two copies of the same multicast stream flow through disjoint paths in the network. At the point in the network (usually the PE closer to the receivers) where the two streams merge, one of the streams is accepted and forwarded on the downstream links, while the other stream is discarded. When a failure is detected in the primary stream due to a link or node failure in the network, MoFRR instructs the forwarding plane to start accepting packets from the backup stream (which now becomes the primary stream).

MoFRR is triggered when the hardware detects traffic loss on the primary path of a given flow or route. Traffic loss is defined as no data packet having been received for 30 ms. When MoFRR is triggered, the primary and secondary reverse-path forwarding (RPF) interfaces are exposed to the forwarding plane and switchover occurs entirely at the hardware level.

The **show mfib hardware route mofrr** command displays the output MoFRR route list of the platform. If there is no MoFRR route enabled in the platform, then the output result is “There are no MoFRR routes configured”.

The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mfib hardware route mofrr** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware route mofrr location 0/0/cpu0

LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route MoFRR Information
 A: Active RPF interface, MS: Monitoring State,
 WDI: Watchdog Count Index, NP: Network Processor,
------------------------------------------------------------------------------

Source: 20.20.20.1      Group: 225.0.0.1       Mask length: 64  RPF Int: Gi0/0/0/8
  ------------------------------------------------------
  RPFS       Interface       A  MS  WDI
  ------------------------------------------------------
  Primary:   Gi0/0/0/8       T  2   1846768
  Backup:    Gi0/0/0/18      F  0   1846769
  ------------------------------------------------------

  OIFS
  ---------------
  NP  Intf
  ---------------
  1   Gi0/0/0/28
  ---------------

  Sequence num: 1  Num of switchovers: 0

  WatchDog Counters:
  ------------------------------------------------------------
             NP   Profile   Valid   Current-Cnt   Last-cnt
  ------------------------------------------------------------
  Prim WDC    0         0       0          3848         12
  Prim WDC    1         0       0          3848         12
  Prim WDC    2         0       0          3848         12
  Prim WDC    3         1       1          3848         12
  Back WDC    0         0       0          3848         12
  Back WDC    1         0       0          3848         12
  Back WDC    2         0       0          3848         12
  Back WDC    3         0       0          3848         12
  ------------------------------------------------------------

  MoFRR Statistics:
  ------------------------------------------------------------
  NP   Prim pkt rx   Back pkt rx    Interrupts         Punts
  ------------------------------------------------------------
   0             0             0             0             0
   1             0             0             0             0
   2             0             0             0             0
   3        406213             0             1             1
  ------------------------------------------------------------

Source: 20.20.20.1      Group: 225.0.0.2       Mask length: 64  RPF Int: Gi0/0/0/8
  ------------------------------------------------------
  RPFS       Interface       A  MS  WDI
  ------------------------------------------------------
```

```
  Primary:   Gi0/0/0/8       T  2   1846770
  Backup:    Gi0/0/0/18      F  0   1846771
  ------------------------------------------------------

  OIFS
  ---------------
  NP  Intf
  ---------------
  1   Gi0/0/0/28
  ---------------

  Sequence num: 1  Num of switchovers: 0

  WatchDog Counters:
  ------------------------------------------------------------
             NP   Profile   Valid   Current-Cnt   Last-cnt
  ------------------------------------------------------------
  Prim WDC    0         0       0          3848         12
  Prim WDC    1         0       0          3848         12
  Prim WDC    2         0       0          3848         12
  Prim WDC    3         1       1          3848         12
  Back WDC    0         0       0          3848         12
  Back WDC    1         0       0          3848         12
  Back WDC    2         0       0          3848         12
  Back WDC    3         0       0          3848         12
  ------------------------------------------------------------

  MoFRR Statistics:
  ------------------------------------------------------------
  NP   Prim pkt rx   Back pkt rx    Interrupts         Punts
  ------------------------------------------------------------
   0             0             0             0             0
   1             0             0             0             0
   2             0             0             0             0
   3        406212        0             1             1
  ------------------------------------------------------------
```

The following is sample output from the show mfib hardware route MoFRR command with only one multicast group:

```
RP/0/RSP0/CPU0:router# show mfib hardware route mofrr 225.0.0.1 location 0/0/CPU0

LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route MoFRR Information
 A: Active RPF interface, MS: Monitoring State,
 WDI: Watchdog Count Index, NP: Network Processor,
------------------------------------------------------------------------------

Source: 20.20.20.1      Group: 225.0.0.1       Mask length: 64  RPF Int: Gi0/0/0/8
  ------------------------------------------------------
  RPFS       Interface       A  MS  WDI
  ------------------------------------------------------
  Primary:   Gi0/0/0/8       T  2   1846772
  Backup:    Gi0/0/0/18      F  0   1846773
  ------------------------------------------------------

  OIFS
  ---------------
  NP  Intf
  ---------------
  1   Gi0/0/0/28
```

```
  ---------------

  Sequence num: 1  Num of switchovers: 0

  WatchDog Counters:
  ------------------------------------------------------------
             NP   Profile   Valid   Current-Cnt   Last-cnt
  ------------------------------------------------------------
  Prim WDC    0         0       0          3848         12
  Prim WDC    1         0       0          3848         12
  Prim WDC    2         0       0          3848         12
  Prim WDC    3         1       1          3848         12
  Back WDC    0         0       0          3848         12
  Back WDC    1         0       0          3848         12
  Back WDC    2         0       0          3848         12
  Back WDC    3         0       0          3848         12
  ------------------------------------------------------------

  MoFRR Statistics:
  ------------------------------------------------------------
  NP   Prim pkt rx   Back pkt rx    Interrupts         Punts
  ------------------------------------------------------------
   0             0             0             0             0
   1             0             0             0             0
   2             0             0             0             0
   3        400465             0             1             1
  ------------------------------------------------------------
```

The following is sample output from the show mfib hardware route MoFRR command with only one multicast source:

```
RP/0/RSP0/CPU0:router# show mfib hardware route mofrr 20.20.20.1 location 0/0/CPU0

LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route MoFRR Information
 A: Active RPF interface, MS: Monitoring State,
 WDI: Watchdog Count Index, NP: Network Processor,
------------------------------------------------------------------------------

Source: 20.20.20.1      Group: 225.0.0.1       Mask length: 64  RPF Int: Gi0/0/0/8
  ------------------------------------------------------
  RPFS       Interface       A  MS  WDI
  ------------------------------------------------------
  Primary:   Gi0/0/0/8       T  2   1846772
  Backup:    Gi0/0/0/18      F  0   1846773
  ------------------------------------------------------

  OIFS
  ---------------
  NP  Intf
  ---------------
  1   Gi0/0/0/28
  ---------------

  Sequence num: 1  Num of switchovers: 0

  WatchDog Counters:
  ------------------------------------------------------------
             NP   Profile   Valid   Current-Cnt   Last-cnt
  ------------------------------------------------------------
  Prim WDC    0         0       0          3848         12
```

```
  Prim WDC    1          0       0          3848         12
  Prim WDC    2          0       0          3848         12
  Prim WDC    3          1       1          3848         12
  Back WDC    0          0       0          3848         12
  Back WDC    1          0       0          3848         12
  Back WDC    2          0       0          3848         12
  Back WDC    3          0       0          3848         12
  ------------------------------------------------------------

  MoFRR Statistics:
  ------------------------------------------------------------
  NP   Prim pkt rx   Back pkt rx    Interrupts         Punts
  ------------------------------------------------------------
   0             0             0             0             0
   1             0             0             0             0
   2             0             0             0             0
   3             0             0             1             1
  ------------------------------------------------------------

Source: 20.20.20.1      Group: 225.0.0.2       Mask length: 64  RPF Int: Gi0/0/0/8
  ------------------------------------------------------
  RPFS       Interface       A  MS  WDI
  ------------------------------------------------------
  Primary:   Gi0/0/0/8       T  2   1846774
  Backup:    Gi0/0/0/18      F  0   1846775
  ------------------------------------------------------

  OIFS
  ---------------
  NP  Intf
  ---------------
  1   Gi0/0/0/28
  ---------------

  Sequence num: 1  Num of switchovers: 0

  WatchDog Counters:
  ------------------------------------------------------------
             NP   Profile   Valid   Current-Cnt   Last-cnt
  ------------------------------------------------------------
  Prim WDC    0          0       0          3848         12
  Prim WDC    1          0       0          3848         12
  Prim WDC    2          0       0          3848         12
  Prim WDC    3          1       1          3848         12
  Back WDC    0          0       0          3848         12
  Back WDC    1          0       0          3848         12
  Back WDC    2          0       0          3848         12
  Back WDC    3          0       0          3848         12
  ------------------------------------------------------------

  MoFRR Statistics:
  ------------------------------------------------------------
  NP   Prim pkt rx   Back pkt rx    Interrupts         Punts
  ------------------------------------------------------------
   0             0             0             0             0
   1             0             0             0             0
   2             0             0             0             0
   3             0             0             1             1
  ------------------------------------------------------------
```

This table describes the significant fields shown in the display.

Table 5: show mfib hardware route mofrr Field Descriptions

Field	Description
RPFS	Primary and backup RPF of the route.
A	Currently active RPF for forwarding the traffic to the egress (OLIST). T: means true, F: means false.
MS	Monitoring state. It has three states. MS=0, indicates that the monitoring state disabled. MS=1, indicates that active RPF is monitoring traffic activity. MS=2, indicates that active RPF is monitoring traffic loss.
WDI	Watchdog Count Index. Each MoFRR route has two Line card specific watchdog indexes, associated with primary and backup RPF, respectively.
OIFS	Output Interfaces in the local line card.
Sequence num	MoFRR specific route sequence number.
Num of switchovers	Total number of switchovers triggered by traffic loss detection in the data plane.
Watchdog Counters	Internal Hardware watchdog counters
MoFRR Statistics	Internal software watchdog counters

If there is no MoFRR route enabled in the platform, the output result will be as follows:

```
RP/0/RSP0/CPU0:router# show mfib hardware route mofrr location 0/0/CPU0

LC Type: Trident
No matching routes in MFIB
There are no MoFRR routes configured.
```

Related Commands

Command	Description
show mfib hardware route olist, on page 97	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.
show mfib hardware route summary, on page 112	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).
show mrib route, on page 189	Displays all entries in the Multicast Routing Information Base (MRIB).

show mfib hardware route olist

To display platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware, use the **show mfib hardware route olist** command in the appropriate mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route olist** {[*****] | [*source-address*] [*group-address* [*/prefix-length*]]} [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*	(Optional) Displays shared tree entries.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mfib hardware route olist** command displays the output interface list (olist) for each route. The Multicast Forwarding (MFWD) process stores olist interfaces in a table lookup unit (TLU) block (in groups of three). As such, the command displays each route three times. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route olist** command. (The output fields are described in the header.)

```
RP/0/RSP0/CPU0:router# show mfib hardware route olist location 0/0/CPU0
```

```
LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route Information - (Ingress)
 C: Chip ID, IC: BACL check, IP: Punt this packet to LC CPU,
 ID: Directly connected, IS: RPF interface signal, IU: Punt copy to RP,
 IF: Punt to LC CPU if forwarded, IM: Result match, IV: Valid entry,
 IR: RPF IF, IA: Fabric slotmask, IG: Multicast group ID
Route Information - (Egress)
 ET: Table ID to be used for OLIST lookup, EO: OLIST count bit,
 ER: Route MGID to be used for OLIST/NRPF lookup, EM: Result match,
 EV: Valid entry, EC: Count of OLIST members on this chip,
 BS: Base of the statistics pointer
Hardware Information
 C: Chip ID; T: Table ID; M: Member ID; Intf: Interface, U: uIDB index,
 I: HW IC flag, B: HW BACL bit, Base: Base of statistics pointer
------------------------------------------------------------------------------

Source: *               Group: 224.0.0.0       Mask length: 24

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x0        0x0    0x8002 0  F  2    T  T  0    0x5516c
  1  T  F  F  F  F  F  T  T  0x0        0x0    0x8002 0  F  2    T  T  0    0x5516c
  2  T  F  F  F  F  F  T  T  0x0        0x0    0x8002 0  F  2    T  T  0    0x5516c
  3  T  F  F  F  F  F  T  T  0x0        0x0    0x8002 0  F  2    T  T  0    0x555a4
  ------------------------------------------------------------------------------

Source: *               Group: 224.0.1.39      Mask length: 32

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  F  T  F  F  F  F  T  T  0x0        0x0    0x8000 0  F  0    T  T  0    0x55162
  1  F  T  F  F  F  F  T  T  0x0        0x0    0x8000 0  F  0    T  T  0    0x55162
  2  F  T  F  F  F  F  T  T  0x0        0x0    0x8000 0  F  0    T  T  0    0x55162
  3  F  T  F  F  F  F  T  T  0x0        0x0    0x8000 0  F  0    T  T  0    0x5559a
  ------------------------------------------------------------------------------

Source: *               Group: 224.0.1.40      Mask length: 32

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  F  T  F  F  F  F  T  T  0x0        0x0    0x8001 0  F  1    T  T  0    0x55167
  1  F  T  F  F  F  F  T  T  0x0        0x0    0x8001 0  F  1    T  T  0    0x55167
  2  F  T  F  F  F  F  T  T  0x0        0x0    0x8001 0  F  1    T  T  0    0x55167
  3  F  T  F  F  F  F  T  T  0x0        0x0    0x8001 0  F  1    T  T  0    0x5559f
  ------------------------------------------------------------------------------

Source: *               Group: 227.0.0.0       Mask length: 16

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
   -----------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x280      0x0    0x8009 0  F  6    T  T  0    0x55199
  1  T  F  F  F  F  F  T  T  0x280      0x0    0x8009 0  F  6    T  T  0    0x55199
  2  T  F  F  F  F  F  T  T  0x280      0x0    0x8009 0  F  6    T  T  0    0x55199
  3  T  F  F  F  F  F  T  T  0x280      0x0    0x8009 0  F  6    T  T  0    0x555d1
```

```
  ------------------------------------------------------------------------------

Source: *               Group: 227.0.0.1       Mask length: 32

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  1  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  2  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  3  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 1  T  5    T  T  3    0x555bd
  ------------------------------------------------------------------------------
  Interface Information
  ------------------------------------------------------
  C  T  M  Intf            U    I  B  Base
  ------------------------------------------------------
  3  1  0  Gi0/0/0/8       9    F  F  0x5540c
  3  1  1  Gi0/0/0/4       5    F  F  0x5540f
  3  1  2  Gi0/0/0/6       7    F  F  0x55412
  ------------------------------------------------------

Source: *               Group: 230.0.0.0       Mask length: 8

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  T  F  T  F  F  F  T  T  0x0        0x0    0x8005 0  F  4    T  T  0    0x55176
  1  T  F  T  F  F  F  T  T  0x0        0x0    0x8005 0  F  4    T  T  0    0x55176
  2  T  F  T  F  F  F  T  T  0x0        0x0    0x8005 0  F  4    T  T  0    0x55176
  3  T  F  T  F  F  F  T  T  0x0        0x0    0x8005 0  F  4    T  T  0    0x555ae
  ------------------------------------------------------------------------------

Source: *               Group: 232.0.0.0       Mask length: 8

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x0        0x0    0x8003 0  F  3    T  T  0    0x55171
  1  T  F  F  F  F  F  T  T  0x0        0x0    0x8003 0  F  3    T  T  0    0x55171
  2  T  F  F  F  F  F  T  T  0x0        0x0    0x8003 0  F  3    T  T  0    0x55171
  3  T  F  F  F  F  F  T  T  0x0        0x0    0x8003 0  F  3    T  T  0    0x555a9
  ------------------------------------------------------------------------------

Source: *               Group: 233.1.0.0       Mask length: 16

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x180      0x0    0x8007 0  F  7    T  T  0    0x5518f
  1  T  F  F  F  F  F  T  T  0x180      0x0    0x8007 0  F  7    T  T  0    0x5518f
  2  T  F  F  F  F  F  T  T  0x180      0x0    0x8007 0  F  7    T  T  0    0x5518f
  3  T  F  F  F  F  F  T  T  0x180      0x0    0x8007 0  F  7    T  T  0    0x555c7
  ------------------------------------------------------------------------------

Source: *               Group: 233.4.0.0       Mask length: 16

  Route Information
  ------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------
```

```
  0  T  F  F  F  F  F  T  T  0x180      0x0    0x8008 0  F  8    T  T  0    0x55194
  1  T  F  F  F  F  F  T  T  0x180      0x0    0x8008 0  F  8    T  T  0    0x55194
  2  T  F  F  F  F  F  T  T  0x180      0x0    0x8008 0  F  8    T  T  0    0x55194
  3  T  F  F  F  F  F  T  T  0x180      0x0    0x8008 0  F  8    T  T  0    0x555cc
  ------------------------------------------------------------------------------
```

```
RP/0/RSP0/CPU0:router# show mfib hardware route olist location 0/4/CPU0

LC Type: A9K-SIP-700

Header      : Hardware Route Information
Source      : Source address
Group       : Group Address
M           : Mask Length
C           : Directly connected check flag
RPF         : Accepting interface for non-bidir entries
S           : Signal if packet arrived on RPF interface
IC          : Aggregated Internal copy flag
PR          : Punt to RP flag for Internal copy in the Loopback interface
PK          : PEEK flag
FGID        : Fabric Group ID
MGID        : Multicast Group ID
PAL Olist   : PAL Olist handle
CPP Olist   : CPP Olist handle
Num OCE     : Number of OCE entries

Header      : Route OCE Entry Information
Interface   : Interface name
Handle      : Interface handle
IC          : Internal copy flag
Accept      : Accept flag
NS          : Negate Signal flag
F/EG        : Forwarding flag

Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
*         |224.0.0.0 |4  |T|Null      |F| F| F|F |0    |16964|0xa6039538      |0x9dc8688c
     |0      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: a60394c4, Flags: 2 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900100

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: a60394c4, Flags: 2 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80100

Route OCE Entry Information
Route OLIST Information
------------------------------------------------------------
```

```
 TREE .. : root : a60394c4 num_nodes 1 num_leaves 0
(in cp) Node: a60394c4 num_child:0 cum[wt:0 free:7]
(in cpp) Node : 0x8d080060 flags : 0x4
   child[0]: [NULL]
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb00000:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x0     pd_32: 0x4244
  output_uidb: 0x1fab    counters_ptr: 0x893f5c30
  byte count: 0          packet count: 0


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
*         |224.0.0.0 |24 |F|Null      |F| F| F|F |0    |16962|0x9e07d2e4      |0x9dc86924
     |0      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d270, Flags: 0 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900180

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d270, Flags: 0 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80180

Route OCE Entry Information
Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9e07d270 num_nodes 1 num_leaves 0
(in cp) Node: 9e07d270 num_child:0 cum[wt:0 free:7]
(in cpp) Node : 0x8d080120 flags : 0x4
   child[0]: [NULL]
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------
```

```
OCE RX Adj Data for 0x8bb00120:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x0     pd_32: 0x4242
  output_uidb: 0x1fab    counters_ptr: 0x893f5c10
  byte count: 0          packet count: 0


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
*         |224.0.1.39|32 |F|Null      |T| F| F|F |0    |16960|0x9e07d678      |0x9dc86970
     |0      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d604, Flags: 1 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b9001c0

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d604, Flags: 1 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce801c0

Route OCE Entry Information
Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9e07d604 num_nodes 1 num_leaves 0
(in cp) Node: 9e07d604 num_child:0 cum[wt:0 free:7]
(in cpp) Node : 0x8d080140 flags : 0x4
   child[0]: [NULL]
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb000f0:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x0     pd_32: 0x4240
  output_uidb: 0x1fab    counters_ptr: 0x893f5c00
  byte count: 0          packet count: 0


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
```

```
*         |224.0.1.40|32 |F|Null      |T| F| F|F |0    |16961|0x9dcbdab4      |0x9dc869bc
     |0      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbda40, Flags: 1 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b9000c0

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbda40, Flags: 1 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce800c0

Route OCE Entry Information
Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9dcbda40 num_nodes 1 num_leaves 0
(in cp) Node: 9dcbda40 num_child:0 cum[wt:0 free:7]
(in cpp) Node : 0x8d0800c0 flags : 0x4
   child[0]: [NULL]
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb00040:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x0     pd_32: 0x4241
  output_uidb: 0x1fab    counters_ptr: 0x893f5c40
  byte count: 0          packet count: 0


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
*         |225.0.0.0 |32 |T|Se0/4/0/0/1|F| F| F|F |64   |17013|0x9dcbd5a4      |0x9dc86a08
      |2      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbd530, Flags: 2 First leaf: 9dcbd9bc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900080

Egress CPP Prefix Information
```

```
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbd530, Flags: 2 First leaf: 9dcbd9bc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80080

Route OCE Entry Information
------------------------------------------------------------
Interface  Handle        IC Accept NS     F/EG
------------------------------------------------------------
Se0/4/0/0/1 0xc000ec0      F T     T         F

**** Leaf Info (in cp) : [9dcbd9bc]
 oce flags = 0x6 next obj type : 11 next obj handle : a73e9104
 **** Leaf Info (in cpp): [0]
 leaf_flags= 0x1 oce_flags: 0  oce_ptr: 0x8c5800c0

------------------------------------------------------------
Interface  Handle        IC Accept NS     F/EG
------------------------------------------------------------
Gi0/4/3/0  0xc000080      F F     T         T

**** Leaf Info (in cp) : [9dcbd450]
 oce flags = 0x5 next obj type : 11 next obj handle : a73e907c
 **** Leaf Info (in cpp): [0x8c5800f0]
 leaf_flags= 0x1 oce_flags: 0x2  oce_ptr: 0x8c580000

Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9dcbd530 num_nodes 1 num_leaves 1
(in cp) Node: 9dcbd530 num_child:1 cum[wt:1 free:6]
(in cpp) Node : 0x8d080080 flags : 0x4
   child[0]: [Leaf] in cp : 9dcbd450 in cpp : 0x8c5800f0)
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb00160:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x40    pd_32: 0x4275
  output_uidb: 0x1fab    counters_ptr: 0x893f5c50
  byte count: 9800       packet count: 196


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
------------------------------------------------------------
12.12.12.2|225.0.0.0 |64 |F|Se0/4/0/0/1|F| F| F|F |64   |17024|0x9dcbcecc      |0x9dc86a54
      |2      |

Ingress CPP Prefix Information
------------------------------------------------------------
```

```
=== QFP Multicast prefix info ===
 Root: 9dcbcfb0, Flags: 0 First leaf: 9dcbccfc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900200

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9dcbcfb0, Flags: 0 First leaf: 9dcbccfc
 Number of nodes: 0x000001, leaves: 0x000001  RPF i/f: 0x007fff
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80200

Route OCE Entry Information
------------------------------------------------------------
Interface  Handle        IC Accept NS     F/EG
------------------------------------------------------------
Se0/4/0/0/1 0xc000ec0      F T     F         F

**** Leaf Info (in cp) : [9dcbccfc]
 oce flags = 0x2 next obj type : 11 next obj handle : a73e9104
 **** Leaf Info (in cpp): [0]
 leaf_flags= 0x1 oce_flags: 0  oce_ptr: 0x8c5800c0

------------------------------------------------------------
Interface  Handle        IC Accept NS     F/EG
------------------------------------------------------------
Gi0/4/3/0  0xc000080      F F     T         T

**** Leaf Info (in cp) : [9dcbcddc]
 oce flags = 0x5 next obj type : 11 next obj handle : a73e907c
 **** Leaf Info (in cpp): [0x8c5800d0]
 leaf_flags= 0x1 oce_flags: 0x2  oce_ptr: 0x8c580000

Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9dcbcfb0 num_nodes 1 num_leaves 1
(in cp) Node: 9dcbcfb0 num_child:1 cum[wt:1 free:6]
(in cpp) Node : 0x8d080000 flags : 0x4
   child[0]: [Leaf] in cp : 9dcbcddc in cpp : 0x8c5800d0)
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb00050:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x40    pd_32: 0x4280
  output_uidb: 0x1fab    counters_ptr: 0x893f5c60
  byte count: 348116500          packet count: 6962330


Hardware Route Information
------------------------------------------------------------
Source    |Group     |M  |C|RPF       |S|IC|PR|PK|FGID |MGID |PAL Olist Handle|CPP OLIST
Handle|Num OCE|
```

```
------------------------------------------------------------
*         |232.0.0.0 |8  |F|Null      |F| F| F|F |0    |16963|0x9e07d184      |0x9dc868d8
     |0      |

Ingress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d110, Flags: 0 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8b900140

Egress CPP Prefix Information
------------------------------------------------------------

=== QFP Multicast prefix info ===
 Root: 9e07d110, Flags: 0 First leaf: 0
 Number of nodes: 0x000001, leaves: 00000000  RPF i/f: 00000000
 RPF Fast Convergence flags: 00000000 Secondary RPF: 00000000
 RPF Fast Convergence timer: 0 ext_leaf: 0x8ce80140

Route OCE Entry Information
Route OLIST Information
------------------------------------------------------------

 TREE .. : root : 9e07d110 num_nodes 1 num_leaves 0
(in cp) Node: 9e07d110 num_child:0 cum[wt:0 free:7]
(in cpp) Node : 0x8d0800e0 flags : 0x4
   child[0]: [NULL]
   child[1]: [NULL]
   child[2]: [NULL]
   child[3]: [NULL]
   child[4]: [NULL]
   child[5]: [NULL]
   child[6]: [NULL]

Route Rx Adjacency Information
------------------------------------------------------------

OCE RX Adj Data for 0x8bb00080:
  base: 39(CPP HW RX ADJ IPV4 MCAST)     adj_flags: 0x0
  pd_16: 0x0     pd_32: 0x4243
  output_uidb: 0x1fab    counters_ptr: 0x893f5c20
  byte count: 0          packet count: 0
```

The following is sample output from the **show mfib hardware route olist** command with only one multicast group:

```
RP/0/RSP0/CPU0:router# show mfib hardware route olist 227.0.0.1 location 0/0/CPU0
------------------------------------------------------------------------------
Legend:
Route Information - (Ingress)
 C: Chip ID, IC: BACL check, IP: Punt this packet to LC CPU,
 ID: Directly connected, IS: RPF interface signal, IU: Punt copy to RP,
 IF: Punt to LC CPU if forwarded, IM: Result match, IV: Valid entry,
 IR: RPF IF, IA: Fabric slotmask, IG: Multicast group ID
Route Information - (Egress)
 ET: Table ID to be used for OLIST lookup, EO: OLIST count bit,
 ER: Route MGID to be used for OLIST/NRPF lookup, EM: Result match,
 EV: Valid entry, EC: Count of OLIST members on this chip,
 BS: Base of the statistics pointer
Hardware Information
```

```
 C: Chip ID; T: Table ID; M: Member ID; Intf: Interface, U: uIDB index,
 I: HW IC flag, B: HW BACL bit, Base: Base of statistics pointer
------------------------------------------------------------------------------

Source: *               Group: 227.0.0.1       Mask length: 32

  Route Information
  ------------------------------------------------------------------------------------------
  C  IC IP ID IS IU IF IM IV IR         IA     IG     ET EO ER   EM EV EC   BS
  ------------------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  1  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  2  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 0  F  5    T  T  0    0x55185
  3  T  F  F  F  F  F  T  T  0x0        0x1    0x8004 1  T  5    T  T  3    0x555bd
  ------------------------------------------------------------------------------------------
  Interface Information
  ------------------------------------------------------
  C  T  M  Intf            U    I  B  Base
  ------------------------------------------------------
  3  1  0  Gi0/0/0/8       9    F  F  0x5540c
  3  1  1  Gi0/0/0/4       5    F  F  0x5540f
  3  1  2  Gi0/0/0/6       7    F  F  0x55412
  ------------------------------------------------------
```

Related Commands

Command	Description
show mfib hardware route accept-bitmap, on page 80	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.
show mfib hardware route summary, on page 112	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route statistics

To display platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route, use the **show mfib hardware route statistics** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route statistics** [**detail**] [*****] [*source-address*] [*group-address* [*/prefix-length*]] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*****	(Optional) Displays shared tree entries.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Displays a detailed list of the routing database.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **show mfib hardware route statistics** command to display the hardware packet and byte counter for a route. Route counters are kept for (S, G) routes only. A single set of counters is provided for all

(*, G) routes.

This command displays the hardware packet and bytes count on a per-route basis. Per-route hardware counters are kept for (S, G) routes only. However, counters are managed dynamically and allocated on a priority basis and may not be available for each (S, G) route. There is a single set of counters for all

(*, G) routes. For example, interface counters and access list counters have higher priority than route counters.

Note Route counters are local to each line card.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route statistics** command.

```
RP/0/RSP0/CPU0:router# show mfib hardware route statistics location 0/4/CPU0

LC Type: A9K-SIP-700
Hardware Prefix Statistics
-------------------------------------------------------------------------------------------
(s, g) RX/TX: Pkt/Byte:    Forward(Pkt/Byte) Punt(Pkt/Byte) RPF Fail(Pkt/Byte) Drop(Pkt/Byte)
-------------------------------------------------------------------------------------------
(*          , 224.0.0.0 )  RX: 0/0                    0/0               0/0
0/0
(*          , 224.0.0.0 )  TX: 0/0                    0/0               0/0
0/0
(*          , 224.0.0.0 )  RX: 0/0                    0/0               0/0
0/0
(*          , 224.0.0.0 )  TX: 0/0                    0/0               0/0
0/0
(*          , 224.0.1.39)  RX: 0/0                    0/0               0/0
0/0
(*          , 224.0.1.39)  TX: 0/0                    0/0               0/0
0/0
(*          , 224.0.1.40)  RX: 0/0                    0/0               0/0
0/0
(*          , 224.0.1.40)  TX: 0/0                    0/0               0/0
0/0
(*          , 225.0.0.0 )  RX: 196/9016                 1/46              0/0
 0/0
(*          , 225.0.0.0 )  TX: 196/9016                 0/0               0/0
 0/0
(12.12.12.2, 225.0.0.0 )  RX: 7931284/364839064            3/138             0/0
     0/0
(12.12.12.2, 225.0.0.0 )  TX: 7931288/364839248            0/0               0/0
     0/0
(*          , 232.0.0.0 )  RX: 0/0                    0/0               0/0
0/0
(*          , 232.0.0.0 )  TX: 0/0                    0/0               0/0
0/0

RP/0/RSP0/CPU0:router# show mfib hardware route statistics location 0/0/CPU0

LC Type: Trident
Legend:
 S: Source, G: Group, Pr: Prefix Length, C: Chip ID, R: Received,
 P: Punted to CPU, F: Forwarded, ID: Ingress Drop, ED: Egress Drop

S: *  G: 224.0.0.0  Pr:24
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------
  No OLIST interfaces found for this route

S: *  G: 224.0.1.39  Pr:32
```

```
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------
  No OLIST interfaces found for this route

S: *  G: 224.0.1.40  Pr:32
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------
  No OLIST interfaces found for this route

S: *  G: 227.0.0.1  Pr:32
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     504844:30290640 / 504843:23222778 / 504856 / 0 / 0
  ------------------------------------------------------------------------
  Interface Statistics:
  ------------------------------------------------------------------------
  Interface       F/P/D (packets:bytes)
  ------------------------------------------------------------------------
  Gi0/0/0/8       504843:23222778 / 0:0 / 0:0
  Gi0/0/0/4       0:0 / 0:0 / 0:0
  Gi0/0/0/6       504843:23222778 / 0:0 / 0:0
  ------------------------------------------------------------------------

S: 4.0.0.2  G: 227.0.0.1  Pr:64
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     3869:232140 / 3869:177974 / 0 / 0 / 0
  ------------------------------------------------------------------------
  Interface Statistics:
  ------------------------------------------------------------------------
  Interface       F/P/D (packets:bytes)
  ------------------------------------------------------------------------
  Gi0/0/0/4       0:0 / 0:0 / 0:0
  Gi0/0/0/8       3869:177974 / 0:0 / 0:0
  Gi0/0/0/6       3869:177974 / 0:0 / 0:0
  ------------------------------------------------------------------------

S: *  G: 230.0.0.0  Pr:8
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
```

```
  3     0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------
  No OLIST interfaces found for this route

S: *  G: 232.0.0.0  Pr:8
  ------------------------------------------------------------------------
  C     R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------
  0     0:0 / 0:0 / 0 / 0 / 0
  1     0:0 / 0:0 / 0 / 0 / 0
  2     0:0 / 0:0 / 0 / 0 / 0
  3     0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------
  No OLIST interfaces found for this route
```

This table describes the significant fields shown in the display.

Table 6: show mfib hardware route statistics Field Descriptions

Field	Description
Ingress Counter	Unique identifier of the ingress counter.
Egress Counter	Unique identifier of the egress counter.
Forward	Number of forwarded packets and bytes.
Punt	Number of bytes punted from the line card CPU.
Drop	Number of dropped bytes.

Related Commands

Command	Description
show mfib hardware route accept-bitmap, on page 80	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route olist, on page 97	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route summary, on page 112	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route summary

To display summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry, use the **show mfib hardware route summary** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route summary location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Use the **show mfib hardware summary** command to display hardware information for the route of the node.

The hardware information of MoFRR (multicast only fast reroute) enabled routes are also displayed. In IOS XR Software Release 3.9.0, the maximum platform supported MoFRR routes are 1024.

The longest-prefix match route is displayed depending on the provided source and group addresses. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route summary** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/1/cpu0

LC Type: Trident
H/W IP Multicast Forwarding Information Base Summary
  No. of (*,G) routes = 5
  No. of (S,G) routes = 10

RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/0/CPU0

LC Type: Trident
H/W IP Multicast Forwarding Information Base Summary
  No. of (*,G) routes = 6
  No. of (S,G) routes = 5
```

```
  No. of (S,G) MoFRR routes = 0,   Maximum supported MoFRR routes = 1024

RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/4/cPU0

LC Type: A9K-SIP-700
Hardware IP Multicast Forwarding Information Base Route Summary
Number of hardware (*, G) routes = 6
Number of hardware (S, G) routes = 1
Number of hardware route-interfaces = 4
Number of hardware Rx adjacencies = 7
Number of hardware Tx adjacencies = 3
Number of ref to decap adjacency  = 0
Mvpn master LC status             = False
```

If there is no MoFRR configured in the platform:

```
RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/0/CPU0

LC Type: Trident
H/W IP Multicast Forwarding Information Base Summary
No. of (*,G) routes = 6
  No. of (S,G) routes = 5
  No. of (S,G) MoFRR routes = 0,   Maximum supported MoFRR routes = 1024
```

This table describes the significant fields shown in the display.

Table 7: show mfib hardware route summary Field Descriptions

Field	Description
No. of (*,G) routes	Number of (*,G) routes installed in hardware.
No. of (S,G) routes	Number of (S,G) routes installed in hardware.
No. of (S,G) MoFRR routes	Number of MoFRR (S,G) routes installed in hardware.
Maximum supported MoFRR routes	Maximum number of MoFRR routes supported in hardware.

Related Commands

Command	Description
show mfib hardware route accept-bitmap, on page 80	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route mofrr, on page 91	Displays the platform-specific Multicast Forwarding Information Base (MFIB) information for the MoFRR (multicast only fast reroute)-enabled list stored in the hardware.
show mfib hardware route olist, on page 97	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware table

To display the platform-specific multicast table information for the Multicast Forwarding Information Base (MFIB) in the hardware, use the **show mfib hardware table** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware table** [**detail**] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Displays detailed platform-specific multicast table information.
location *node-id*	(Optional) Specifies the MFIB location.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.1	This command was introduced.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of the **show mfib hardware table** command:

```
RP/0/RSP0/CPU0:router# show mfib hardware table detail location 0/1/CPU0

LC Type: Trident

------------------------------------------------------------------
Legend:
 NP: Network Processor, MNP: Master NP, SW OC: Software OLIST Count
 TID: Table ID, MLC: Master Linecard (PD Flag)
 MNP_id: Master NP ID, C_NP_MASK: Composite NP Mask
------------------------------------------------------------------
---------------
NP MNP SW OC
---------------
```

```
0  F   0
1  F   0
2  F   0
3  F   0
---------------

---------------------------
TID    MLC MNP_id C_NP_MASK
---------------------------
0x0    F   0      0x0
---------------------------
```

This table describes the significant fields shown in the display.

Table 8: show mfib hardware table Field Descriptions

Field	Description
NP	Specifies the network processor.
MNP	Specifies the master network processor.
SW OC	Specifies the software OLIST count.
TID	Specifies the Table ID.

show mfib platform route accept-bitmap

To display platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes, use the **show mfib platform route accept-bitmap** command in EXEC mode

.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route accept-bitmap** [*****] [*group-address* [*/prefix-length*]] [**detail**] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*	(Optional) Displays shared tree entry.
source-address	(Optional) IP address or hostname of the multicast route source:
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Detailed list of the routing database.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware route accept-bitmap** command.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform route accept-bitmap** command:

```
RP/0RSP0/CPU0:RTP-VIKING-MCAST-04#show mfib platform route accept-bitmap location 0/3/cpu0


!! File saved at 15:41:30 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Source: *               Group: 239.0.0.0       Mask: 8   RPF Int: Un:0x0

 Common SW Information
 ---------------------

 Accept bitmap SW summary
 ------------------------------------------------
   IIF Count  Row Count
 ------------------------------------------------
           5          4
 ------------------------------------------------

 IIFs in SW Accept bitmap
 ------------------------------------------------
  Interface            Ifhandle   uIDB
 ------------------------------------------------
  tunnel-ip1           0x08000660 10
  TenGigE0/3/0/3/0     0x06001440 2
 ------------------------------------------------

 Raw SW Accept bitmap
 ------------------------------------------------
  [Parent MLI: 100]
 ------------------------------------------------
  NP#  Key    Bits  0        4        8        12
 ------------------------------------------------
  NP0  0x0000 1     00040000 00000000 00000000 00000000
  NP1  0x0000 2     04040000 00000000 00000000 00000000
  NP2  0x0000 1     00040000 00000000 00000000 00000000
  NP3  0x0000 1     00040000 00000000 00000000 00000000
 ------------------------------------------------


 Engine Information
 ---------------------
 Raw HW Accept bitmap
 ------------------------------------------------
  [Parent MLI: 100, NP=0]
 ------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------
  0x0000 1     00040000 00000000 00000000 00000000
 ------------------------------------------------

  [Parent MLI: 100, NP=1]
 ------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------
  0x0000 2     04040000 00000000 00000000 00000000
 ------------------------------------------------
```

The following is sample detailed output from the **show mfib platform route accept-bitmap detail** command:

```
RP/0RSP0/CPU0:RTP-VIKING-MCAST-04#show mfib platform route accept-bitmap detail location
0/3/cpu0


!! File saved at 15:42:37 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Source: *               Group: 239.0.0.0       Mask: 8   RPF Int: Un:0x0

 Common SW Information
 ---------------------

 Accept bitmap SW summary
 ------------------------------------------------
   IIF Count  Row Count
 ------------------------------------------------
           5          4
 ------------------------------------------------

 IIFs in SW Accept bitmap
 ------------------------------------------------
  Interface            Ifhandle   uIDB
 ------------------------------------------------
  tunnel-ip1           0x08000660 10
  TenGigE0/3/0/3/0     0x06001440 2
 ------------------------------------------------

 Raw SW Accept bitmap
 ------------------------------------------------
  [Parent MLI: 100]
 ------------------------------------------------
  NP#  Key    Bits  0        4        8        12
 ------------------------------------------------
  NP0  0x0000 1     00040000 00000000 00000000 00000000
  NP1  0x0000 2     04040000 00000000 00000000 00000000
  NP2  0x0000 1     00040000 00000000 00000000 00000000
  NP3  0x0000 1     00040000 00000000 00000000 00000000
 ------------------------------------------------


 Engine Information
 ---------------------
 Raw HW Accept bitmap
 ------------------------------------------------
  [Parent MLI: 100, NP=0]
 ------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------
  0x0000 1     00040000 00000000 00000000 00000000
 ------------------------------------------------

  [Parent MLI: 100, NP=1]
 ------------------------------------------------
  Key    Bits  0        4        8        12
 ------------------------------------------------
  0x0000 2     04040000 00000000 00000000 00000000
 ------------------------------------------------
```

show mfib platform ltrace

To display IP Multicast platform specific trace information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib platform ltrace** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform ltrace** [**error** | **event** | **frequent-event** | **hexdump** | **init** | **last** | **netio** | **reverse** | **stats** | **tailf** | **unique** | **verbose** | **wrapping**] **file** *file-name* **location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
error	(Optional) Displays error events.
event	(Optional) Displays non-frequent events.
frequent-event	(Optional) Displays frequent events.
hexdump	(Optional) Displays traces in hexadecimal ouput.
init	(Optional) Displays initiation and configuration events.
last	(Optional) Displays the last n entries.
netio	(Optional) Displays the netio events.
reverse	(Optional) Displays the traces in the reverse order starting with the latest events.
stats	(Optional) Displays the statistics.
tailf	(Optional) Displays the new traces as they are added.
unique	(Optional) Displays the unique entries with the counts.
verbose	(Optional) Displays the internal debugging information.
wrapping	(Optional) Displays the wrapping entries.
file *file-name*	(Optional) Specifies the file name.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware ltrace** command.

Usage Guidelines

This command will not display any useful output if only RSP is specified or if no location is specified.



Note The command output is for internal use by Cisco support and development teams.

Task ID

Task ID	Operations
multicast	read

show mfib platform resource-counters

To display the allocated and freed hardware resources for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib platform resource-counters** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform resource-counters location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib platform resource-counters** command.

Usage Guidelines

Use the **show mfib platform resource-counters** command to show the resource usage of NP structures per NP.

Note Use the location option in the **show mfib platform resource-counters** command to indicate for which linecard you need information. The command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform resource-counters** command:

```
RP/0/RSP0/CPU0:router# show mfib ipv4 platform resource-counters location 0/3/cpu0
!! File saved at 15:30:43 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------
Num NP: 4, NP Running Mask: 0xf, NP Inactive Mask: 0x0
------------------------------------------------------------------------
 ------------------------------------------------------------------------
 Note:
 For IPv4, the (*,G) resource counter represents both the (*,G) and (S,G)
```

```
 entries. For IPv6, the (*,G) and (S,G) entries are maintained separately.
 The MVPN, MVPN Decap and MLC counters are all logical entries in the same
 structure so you will see similar counts across those columns
 The 'shared' resources represent HW NP structures that are shared between
 IPv4 and IPv6 processes
 ------------------------------------------------------------------------------

SW Resource Usage
------------------------------------------------------------------------------------------------------------------------

      (*,G)      (S,G)
 NP  rte leaf  rte leaf    punt     ole   mofrr     wdc    mvpn   bidir mvpn decap  encap
ole     mlc
------------------------------------------------------------------------------------------------------------------------

  0        16         0       2       2       0       0       4       0           0
  0       0
  1        16         0       4       4       0       0       4       0           0
  0       0
  2        16         0       2       2       0       0       3       0           0
  0       0
  3        16         0       2       2       0       0       3       0           0
  0       0
------------------------------------------------------------------------------------------------------------------------

 Max   131072    131072  131072   65536    4096       0  131072  131072           0
98304       0
------------------------------------------------------------------------------------------------------------------------

HW NP Structure Resource Usage
------------------------------------------------------------------------------------------------------------------------

      (*,G)      (S,G)
 NP  rte leaf  rte leaf  rte_node    punt  hw ole   mofrr     wdc    mvpn   bidir mvpn decap
  encap ole     mlc
------------------------------------------------------------------------------------------------------------------------

  0        16         0        16       2       0       0       0       4       0
 0          0       0
  1        16         0        16       4       4       0       0       4       0
 0          0       0
  2        16         0        16       2       0       0       0       3       0
 0          0       0
  3        16         0        16       2       0       0       0       3       0
 0          0       0
------------------------------------------------------------------------------------------------------------------------

 Max   131072         0    131072  131072   65536    4096       0  131072  131072
 0      98304       0
------------------------------------------------------------------------------------------------------------------------

HW NP Structure Shared IPv4/IPv6 Resource Usage
------------------------------------------------------------------------------------------------------------------------

 NP  rte node  rte node      punt      punt       ole       ole     mofrr     mofrr
mvpn      mvpn     bidir     bidir
         ipv4     total      ipv4     total      ipv4     total      ipv4     total
ipv4     total      ipv4     total
------------------------------------------------------------------------------------------------------------------------

  0        16        48         2         2         0         0         0         0
  4         5         0         0
  1        16        48         4         4         4         4         0         0
  4         4         0         0
```

```
  2         16         48          2          2          0          0          0          0
  3          3          0          0
  3         16         48          2          2          0          0          0          0
  3          3          0          0
-------------------------------------------------------------------------------------------------------------------

 Max    131072     131072     131072     131072      65536      65536       4096       4096
131072     131072     131072     131072
-------------------------------------------------------------------------------------------------------------------
```

This table describes the significant fields shown in the display.

Table 9: show mfib platform resource counters Field Descriptions

Field	Description
Type	Describes the structure type.
Allocated	The number of blocks allocated per structure type.
Freed	The number of blocks freed per structure type.
Delta	The difference between allocated and freed blocks per structure type.

show mfib platform route location

To display the platform-specific Multicast Forwarding Information Base (MFIB)-enabled location in the hardware, use the **show mfib platform route location** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] [**platform route**] `[detail]` [*source-address*] [*group-address* [*prefix-length*]] **location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
	(Optional) Displays shared tree entry.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ *prefix-length*	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
node-id	Node ID for an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware route location** command.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform route location** command:

```
RP/0/RSP0CPU0:RTP-VIKING-MCAST-04#show mfib platform route 227.0.0.0/8 location 0/3/cPU0

LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Legend:
Common SW:
```

```
Route Information
    B:    BACL check               S:    RPF Interface signal
    DC:   Directly connected       PL:   Punt to LC CPU
    PR:   Punt to RP               PF:   Punt if forwarded
    DR:   Drop all                 RI:   RPF interface
    MF:   MoFRR enabled            TR:   Tunnel route
    TE:   Tunnel encap             CD:   Conditional decap
    MI:   MVET index               NI:   Not Installed
    BD:   Bidir

MVPN Information (Common SW)
    MLI:   MVPN table index        VTID:  VRF Table ID
    RPFID: RPF Identifier

MoFRR Information
    A:    Active RPF interface     RI:   RPF interface (or RPF ID)
    WDI:  Watchdog counter index
------------------------------------------------------------------------------

Source: *               Group: 225.0.0.1       Mask: 32  RPF Int: De3

 Common SW Information
 ---------------------
 MGID: 16988     MLI: 95        Fabric Slotmask: 0x8       FGID: 0x8
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR BD RI         MF TR TE CD MI
  ------------------------------------------------------------------------------
  F  T  T  F  F  F  F  F  0x80006e0  F  F  F  F  0x0
  ------------------------------------------------------------------------------

Source: 23.1.1.2        Group: 225.0.0.1       Mask: 64  RPF ID : 1

 Common SW Information
 ---------------------
 MGID: 16990     MLI: 97        Fabric Slotmask: 0x8       FGID: 0x8
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR BD RI         MF TR TE CD MI
  ------------------------------------------------------------------------------
  F  F  F  F  F  F  F  F  1          F  F  F  F  0x0
  ------------------------------------------------------------------------------

 MVPN/MLDP Decap Information:
  RPF ID: 1
  RPF ID MGID: Primary:16986 Backup:16987
  Last refcount bitmask (RPF ID): 0x2, Sets: 5, Clears: 4
  MNP Olist: [NP0:0 NP1:1 NP2:0 NP3:0 ]
  Turnaround flag: F
```

The following is detailed sample output from the **show mfib platform route detail location** command:

```
RP/0/RSP0CPU0:RTP-VIKING-MCAST-04#show mfib platform route detail 227.0.0.0/8 location
0/3/cPU0

!! File saved at 15:57:00 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Legend:
Common SW:
Route Information
    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
```

```
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            T:    Table ID for lookup
    OC:   Count of OLIST members   MF:   MoFRR enabled
    TR:   Tunnel Route             TE:   Tunnel Encap
    TD:   Tunnel Decap             CD:   Conditional Decap
    MI:   MVET index               Base: Base of the statistics pointer
    NI:   Not Installed            BD:   Bidir

MVPN Information (Common SW)
    MLI:   MVPN table index        VTID:  VRF Table ID
    RPFID: RPF Identifier

MoFRR Information
    MLI:  Multicast leaf index     A:    Active RPF interface
    RI:   RPF interface (or RPF ID) WDI:  Watchdog counter index
------------------------------------------------------------------------

Engine:
Route Information:

    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            T:    Table ID for lookup
    OC:   Count of OLIST members   MF:   MoFRR enabled
    TR:   Tunnel Route             TE:   Tunnel Encap
    TD:   Tunnel Decap             CD:   Conditional Decap
    MG:   MGID                     ML:   Multicast Leaf Index (MLI)
    MI:   MVET index               Base: Base of the statistics pointer
    NI:   Not Installed            BD:   Bidir
------------------------------------------------------------------------

 Engine MVPN Decap Information:
    MLI:   MVPN table index        VTID:  VRF Table ID
    RPFID: RPF Identifier          TUS:   Tunnel uIDB set
    MVD:   MVET entry dirty        NP:    NP ID
    TStat: Tunnel stat pointer     TUIDB: Tunnel uIDB
    TIFH:  Tunnel Interface handle
------------------------------------------------------------------------

Source: *               Group: 225.0.0.1       Mask: 32  RPF Int: De3

 Common SW Information
 ---------------------
 MGID: 16988     MLI: 95        Fabric Slotmask: 0x8       FGID: 0x8
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  T  T  F  F  F  F  F  0x80006e0  0  0    F  F  F  F  F  0x0  0xc68c90
  1  F  T  T  F  F  F  F  F  0x80006e0  1  1    F  F  F  F  F  0x0  0xc69239
  2  F  T  T  F  F  F  F  F  0x80006e0  0  0    F  F  F  F  F  0x0  0xc68c90
  3  F  T  T  F  F  F  F  F  0x80006e0  0  0    F  F  F  F  F  0x0  0xc68c90
  ------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------
  MGID: 16988 Mask: 0x2  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------
 Engine Information
 ---------------------
  ------------------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         MG     ML     T  OC   MF   TR TE TD CD MI   Base
```

```
 ---------------------------------------------------------------------------------------------
 0  F  T  T  F  F  F  F  F  0x80006e0  16988  95     0  0    F  F  F  F  F  0x0  0xc68c90
 1  F  T  T  F  F  F  F  F  0x80006e0  16988  95     0  1    F  F  F  F  F  0x0  0xc69239
 2  F  T  T  F  F  F  F  F  0x80006e0  16988  95     0  0    F  F  F  F  F  0x0  0xc68c90
 3  F  T  T  F  F  F  F  F  0x80006e0  16988  95     0  0    F  F  F  F  F  0x0  0xc68c90
 ---------------------------------------------------------------------------------------------

Source: 23.1.1.2        Group: 225.0.0.1       Mask: 64  RPF ID : 1

 Common SW Information
 ---------------------
 MGID: 16990     MLI: 97        Fabric Slotmask: 0x8       FGID: 0x8
  ---------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ---------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  F  1          0  0    F  F  F  F  F  0x0  0xc68c9a
  1  F  F  F  F  F  F  F  F  1          1  1    F  F  F  F  F  0x0  0xc6925d
  2  F  F  F  F  F  F  F  F  1          0  0    F  F  F  F  F  0x0  0xc68c9a
  3  F  F  F  F  F  F  F  F  1          0  0    F  F  F  F  F  0x0  0xc68c9a
  ---------------------------------------------------------------------------

  Software MGID Information
  -------------------------------------------------
  MGID: 16990 Mask: 0x2  Old MGID: 0 Old Mask: 0x2
  -------------------------------------------------
 MVPN/MLDP Decap Information:
  RPF ID: 1
  RPF ID MGID: Primary:16986 Backup:16987
  Last refcount bitmask (RPF ID): 0x2, Sets: 5, Clears: 4
  MNP Olist: [NP0:0 NP1:1 NP2:0 NP3:0 ]
  Turnaround flag: F

 Engine Information
 ---------------------
  ---------------------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         MG     ML     T  OC   MF   TR TE TD CD MI   Base

  ---------------------------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  F  0x1        16990  97     0  0    F  F  F  F  F  0x0  0xc68c9a
  1  F  F  F  F  F  F  F  F  0x1        16990  97     0  1    F  F  F  F  F  0x0  0xc6925d
  2  F  F  F  F  F  F  F  F  0x1        16990  97     0  0    F  F  F  F  F  0x0  0xc68c9a
  3  F  F  F  F  F  F  F  F  0x1        16990  97     0  0    F  F  F  F  F  0x0  0xc68c9a
  ---------------------------------------------------------------------------------------------
```

show mfib platform route olist

To display platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware, use the **show mfib platform route olist** command in the appropriate mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route olist** {[*****] | [*source-address*] [*group-address* [*/prefix-length*]]} [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*	(Optional) Displays shared tree entries.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Displays a detailed list of the routing database. Requires 140 columns.
location *node-id*	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware route olist** command.

Usage Guidelines

The **show mfib platform route olist** command displays the output interface list (olist) for each route. As such, the command displays each route three times. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform route olist** command. (The output fields are described in the header.)

```
RP/0/RSP0/CPU0:router# show mfib platform route olist location 0/3/CPU0
!! File saved at 15:59:28 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Legend:
Common SW:
Route Information
    B:    BACL check              S:    RPF Interface signal
    DC:   Directly connected      PL:   Punt to LC CPU
    PR:   Punt to RP              PF:   Punt if forwarded
    DR:   Drop all                RI:   RPF interface
    FS:   Fabric slotmask         G:    Multicast group ID
    M:    Multicast leaf index    NI:   Not Installed
    BD:   Bidir

Interface Information
    Intf: Interface               OT:   OLE Type
    U:    uIDB index              T:    Table ID
    IC:   HW IC flag              B:    HW BACL flag
------------------------------------------------------------------------------

Source: *               Group: 225.0.0.1       Mask: 32  RPF Int: De3

 Common SW Information
 ---------------------
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR BD RI         FS         G      M
  ------------------------------------------------------------------------------
  F  T  T  F  F  F  F  F  0x80006e0  0x8        16988  95
  ------------------------------------------------------------------------------

  Interface Information
  ------------------------------------------------------------------------------
  NP Intf            OT  U      T  IC B
  ------------------------------------------------------------------------------
  1  Te0/3/0/3/2     REG 13     1  F  F
  ------------------------------------------------------------------------------

  OLIST counts
  ------------------------------------------------------------
  NP:         0     1     2     3
  Count:      0     1     0     0
  ------------------------------------------------------------

Source: 23.1.1.2        Group: 225.0.0.1       Mask: 64  RPF ID : 1

 Common SW Information
 ---------------------
  ------------------------------------------------------------------------------
  B  S  DC PL PR PF DR BD RI         FS         G      M
  ------------------------------------------------------------------------------
  F  F  F  F  F  F  F  F  1          0x8        16990  97
  ------------------------------------------------------------------------------

  Interface Information
  ------------------------------------------------------------------------------
  NP Intf            OT  U      T  IC B
  ------------------------------------------------------------------------------
  1  Te0/3/0/3/2     REG 13     1  F  F
  ------------------------------------------------------------------------------

  OLIST counts
  ------------------------------------------------------------
```

```
  NP:         0     1     2     3
  Count:      0     1     0     0
  -------------------------------------------------------
```

The following is detailed sample output from the **show mfib platform route detail olist** command.

```
RP/0/RSP0/CPU0:router# show mfib platform route detail olist location 0/3/CPU0
!! File saved at 16:00:07 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Legend:
Common SW:
Route Information
    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            FS:   Fabric slotmask
    G:    Multicast group ID       M:    Multicast Leaf Index
    T:    Table ID for lookup      OC:   Count of OLIST members
    Base: Base of the statistics pointer NI:   Not Installed
    BD:   Bidir

Interface Information
    NP:   NP ID                    Intf: Interface
    U:    uIDB index               OT:   OLE Type
    T:    Table ID                 IC:   HW IC flag
    B:    HW BACL bit              EU:   Interface uIDB index
    IB:   Bundle interface         EH:   In HW OLIST table
    OIDX: OLIST index on NP        PT:   Punt table entry
    Base: Statistics Ptr base      RM:   Remote FGID (Pri/Back)
    BD_ID: Bridge Domain ID if BVI RH:   Raw hash

Software OLIST Information
    SW OC: Software OLIST counts   HW OC: Hardware OLIST counts
    T:     Table ID                SD:    Send direct flag
------------------------------------------------------------------------------
Engine: Olist Information:

    NP:   NP ID                    Intf: Interface
    U:    uIDB index               OT:   OLE Type
    T:    Table ID                 IC:   HW IC flag
    B:    HW BACL bit              EU:   Interface uIDB index
    IB:   Bundle interface         EH:   In HW OLIST table
    OIDX: OLIST index on NP        PT:   Punt table entry
    Base: Statistics Ptr base      RM:   Remote FGID (Pri/Back)
    BD_ID: Bridge Domain ID if BVI RH:   Raw hash
------------------------------------------------------------------------------

Source: *               Group: 225.0.0.1       Mask: 32  RPF Int: De3

 Common SW Information
 ---------------------
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         FS         G      M      T  OC   Base
  ------------------------------------------------------------------------------
  0  F  T  T  F  F  F  F  F  0x80006e0  0x8        16988  95     0  0    0xc68c90
  1  F  T  T  F  F  F  F  F  0x80006e0  0x8        16988  95     1  1    0xc69239
  2  F  T  T  F  F  F  F  F  0x80006e0  0x8        16988  95     0  0    0xc68c90
  3  F  T  T  F  F  F  F  F  0x80006e0  0x8        16988  95     0  0    0xc68c90
  ------------------------------------------------------------------------------

  Interface Information
  ------------------------------------------------------------------------------
```

```
 NP Intf            OT  U      T  IC B  EU     IB EH   OIDX PT Base     RH
 ---------------------------------------------------------------------------------
 1  Te0/3/0/3/2     REG 13     1  F  F  13     F  T/T  0    T  0xc69243 0x0
 ---------------------------------------------------------------------------------

 Software OLIST Information
 --------------------------------
 NP    SW OC    HW OC    T    SD
 --------------------------------
 1     1        1        1    T
 --------------------------------


 Engine Information
 --------------------
  ---------------------------------------------------------------------------
  NP Intf       OT  U      T  IC B  VRF  Base     RH
  ---------------------------------------------------------------------------
  1  0x60014c0  REG 13     1  F  F  19   0xc69243 0x0
  ---------------------------------------------------------------------------
Source: 23.1.1.2        Group: 225.0.0.1       Mask: 64  RPF ID : 1

 Common SW Information
 --------------------
  ---------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         FS         G      M      T  OC   Base
  ---------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  F  1          0x8        16990  97     0  0    0xc68c9a
  1  F  F  F  F  F  F  F  F  1          0x8        16990  97     1  1    0xc6925d
  2  F  F  F  F  F  F  F  F  1          0x8        16990  97     0  0    0xc68c9a
  3  F  F  F  F  F  F  F  F  1          0x8        16990  97     0  0    0xc68c9a
  ---------------------------------------------------------------------------

  Interface Information
  ---------------------------------------------------------------------------------
  NP Intf            OT  U      T  IC B  EU     IB EH   OIDX PT Base     RH
  ---------------------------------------------------------------------------------
  1  Te0/3/0/3/2     REG 13     1  F  F  13     F  T/T  0    T  0xc6924c 0x0
  ---------------------------------------------------------------------------------

  Software OLIST Information
  --------------------------------
  NP    SW OC    HW OC    T    SD
  --------------------------------
  1     1        1        1    T
  --------------------------------


 Engine Information
 --------------------
  ---------------------------------------------------------------------------
  NP Intf       OT  U      T  IC B  VRF  Base     RH
  ---------------------------------------------------------------------------
  1  0x60014c0  REG 13     1  F  F  19   0xc6924c 0x0
  ---------------------------------------------------------------------------
```

show mfib platform table

To display the platform-specific multicast table information for the Multicast Forwarding Information Base (MFIB) in the hardware, use the **show mfib platform table** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform table** [**detail**] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Displays detailed platform-specific multicast table information.
location *node-id*	(Optional) Specifies the MFIB location.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware table** command.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of the **show mfib platform table** command:

```
RP/0/RSP0/CPU0:router# show mfib platform table location 0/3/CPU0
!! File saved at 15:57:37 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE

RSI Table id: 0xe0000000
VRF Table id: 0
MLC         : False
Default MNP : True
MNP NP ID   : 0
MNP Bitmask : 0x1
------------------------------------------------------------------------
```

```
Num NP: 4, NP Running Mask: 0xf, NP Inactive Mask: 0x0
------------------------------------------------------------------------
----------------------------------------
NP MNP Enabled HW [Flag:Exists]  Olist Count
----------------------------------------
0  False       False   :False    0
1  False       False   :False    0
2  False       False   :False    0
3  False       False   :False    0
----------------------------------------
```

The following example shows the detailed sample output of the **show mfib platform table detail location** command:

```
RP/0/RSP0/CPU0:router# show mfib platform table detail location 0/3/CPU0
!! File saved at 15:58:03 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE

RSI Table id: 0xe0000000
VRF Table id: 0
MLC         : False
Default MNP : True
MNP NP ID   : 0
MNP Bitmask : 0x1
------------------------------------------------------------------------
Num NP: 4, NP Running Mask: 0xf, NP Inactive Mask: 0x0
------------------------------------------------------------------------
----------------------------------------
NP MNP Enabled HW [Flag:Exists]  Olist Count
----------------------------------------
0  False       False   :False    0
1  False       False   :False    0
2  False       False   :False    0
3  False       False   :False    0
----------------------------------------
  ----------------------------------------
  RPF ID Refcounts: [No. of RPFIDs: 1]
  ----------------------------------------
  RPFID: 1
    Collapsed Bitmask    : 0x3
    Set Count            : 22
    Clear Count          : 18
    NP Refcounts [NP0] [NP1] [NP2] ...
      VRF Refcounts : [0] [1] [0] [0]
      Core Refcounts: [2] [3] [0] [0]
  ----------------------------------------
```

This table describes the significant fields shown in the display.

Table 10: show mfib platform table Field Descriptions

Field	Description
NP	Specifies the network processor.
MNP	Specifies the master network processor.
RSI Table ID	Specifies the Router Space Infrastructure Table ID.

show mfib platform route internallogical

To display the route internal structures for the platform-specific Multicast Forwarding Information Base (MFIB) in the hardware, use the **show mfib platform route internal show mfib platform route logical** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route internal logical** [*****] [*source-address*] [*group-address* [/ *prefix-length*]] [**detail**] [**location** *node-id*]

Syntax Description

*****	(Optional) Displays shared tree entries.
A.B.C.D	(Optional) Source IP address or hostname of the MFIB route.
A.B.C.D/length	(Optional) Group IP address or hostname of the MFIB route and the prefix length. Prefix length of the MFIB group address is a decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Details of each route (requires 140 columns).
location *node-id*	(Optional) Specifies the MFIB location.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.9.1	This command was introduced.
Release 5.2.0	This command was changed from show mfib platform route internal to show mfib platform route logical.

Usage Guidelines

Note The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of the **show mfib platform route internal show mfib platform route logical** command:

```
RP/0/RSP0/CPU0:router# show mfib platform route internal detail location 0/1/CPU0

LC Type: Trident
------------------------------------------------------------------------------
Legend:
Route Information - (Ingress)
 NP: Network Processor, IC: BACL check, IP: Punt this packet to LC CPU,
 ID: Directly connected, IS: RPF interface signal, IU: Punt copy to RP,
 IF: Punt to LC CPU if forwarded, IM: Result match, IV: Valid entry,
 IR: RPF IF, IA: Fabric slotmask, IG: Multicast group ID
Route Information - (Egress)
 ET: Table ID to be used for OLIST lookup, EO: OLIST count bit,
 ER: Route MGID to be used for OLIST/NRPF lookup, EM: Result match,
 EV: Valid entry, EC: Count of OLIST members on this chip,
 BS: Base of the statistics pointer
Route Information - (MDT)
 TU: Tunnel Route, TE: Tunnel Encap, TD: Tunnel Decap,
 CD: Conditional Decap, MI: MVET Index
MDT Encap Information
 NP: Network Processor, UC: Use Customer ToS,
 Csum: IP Checksum, TID: Table ID, UIDB: Tunnnel UIDB,
 T-ifh: Tunnel Interface Handle, StatP: Tunnnel Stat Ptr,
 CMG: Core Route Multicast Group ID, TMTU: Tunnnel MTU
Software Route Information (PD)
 T: Tunnel Route, E: Encap, D: Decap, CD: Conditional Decap,
 MVET-ID: MDT Encap Table ID, MVD: MVET Entry Dirty,
 TUS: Tunnel UIDB Set, TID: Table ID, UIDB: Tunnnel UIDB
 TMTU: Tunnnel MTU
------------------------------------------------------------------------------
Source: *               Group: 224.0.0.0       Mask length: 4   RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R             A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F T F F F T T 0x0          0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  1  T F T F F F T T 0x0          0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  2  T F T F F F T T 0x0          0x0    0x8080 0 F 3    T T 0    0x3640f  F F F
  3  T F T F F F T T 0x0          0x0    0x8080 0 F 3    T T 0    0x3640f  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 224.0.0.0       Mask length: 24  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R             A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0          0x0    0x8084 0 F 0    T T 0    0x36400  F F F
  1  T F F F F F T T 0x0          0x0    0x8084 0 F 0    T T 0    0x36400  F F F
```

```
  2  T F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F
  3  T F F F F F T T 0x0        0x0    0x8084 0 F 0    T T 0    0x36400  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *              Group: 224.0.1.39      Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  1  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  2  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F
  3  F T F F F F T T 0x0        0x0    0x8085 0 F 1    T T 0    0x36405  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *              Group: 224.0.1.40      Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  1  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  2  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F
  3  F T F F F F T T 0x0        0x0    0x8086 0 F 7    T T 0    0x36423  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *              Group: 232.0.0.0       Mask length: 8   RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  1  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  2  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F
  3  T F F F F F T T 0x0        0x0    0x8087 0 F 2    T T 0    0x3640a  F F F

  Software Route Information (PD)
```

```
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.0.0      Mask length: 16  RPF Int: Gi0/1/

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  1  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  2  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F
  3  T F F F F F T T 0x2000500  0x0    0x8081 0 F 6    T T 0    0x3641e  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.60.60    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  1  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  2  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F
  3  T F F F F F T T 0x0        0x40   0x8089 0 F 5    T T 0    0x36419  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.62.62    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  1  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  2  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F
  3  T F F F F F T T 0x0        0x40   0x8088 0 F 4    T T 0    0x36414  F F F

  Software Route Information (PD)
  ------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
```

```
  ------------------------------------------------------------

Source: *               Group: 239.60.64.64    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F
  1  T F F F F F T T 0x0        0x2    0x8082 1 T 8    T T 1    0x36428  F F F
  2  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F
  3  T F F F F F T T 0x0        0x2    0x8082 0 F 8    T T 0    0x36428  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------

Source: *               Group: 239.60.66.66    Mask length: 32  RPF Int: None

  Route Information
  -----------------
  ------------------------------------------------------------------------------
  N  I I I I I I I I I          I      I      E E E    E E E    B        T T T
  P  C P D S U F M V R          A      G      T O R    M V C    S        U E D
  ------------------------------------------------------------------------------
  0  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F
  1  T F F F F F T T 0x0        0x2    0x8083 1 T 9    T T 1    0x3642d  F F F
  2  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F
  3  T F F F F F T T 0x0        0x2    0x8083 0 F 9    T T 0    0x3642d  F F F

  Software Route Information (PD)
  -------------------------------
  T E D CD MVET-ID MVD TUS TID        UIDB   T-ifh      TMTU
  ------------------------------------------------------------
  F F F F  0x0     F   F   0x0        0x0    0x0        0
  ------------------------------------------------------------


RP/0/RSP0/CPU0:RTP-VIKING-MCAST-04#show mfib platform route logical detail location 0/2/cPU0

LC Type: A9K-MOD80-SE
------------------------------------------------------------------------------
Legend:
Route Information
    NP:   NP ID                    B:    BACL check
    S:    RPF Interface signal     DC:   Directly connected
    PL:   Punt to LC CPU           PR:   Punt to RP
    PF:   Punt if forwarded        DR:   Drop all
    RI:   RPF interface            T:    Table ID for lookup
    OC:   Count of OLIST members   MF:   MoFRR enabled
    TR:   Tunnel Route             TE:   Tunnel Encap
    TD:   Tunnel Decap             CD:   Conditional Decap
    MI:   MVET index               Base: Base of the statistics pointer
    NI:   Not Installed            BD:   Bidir

MVPN Information
    MLI:   MVPN table index        VTID:  VRF Table ID
    RPFID: RPF Identifier          TUS:   Tunnel uIDB set
```

```
    MVD:   MVET entry dirty        NP:    NP ID
    TStat: Tunnel stat pointer     TUIDB: Tunnel uIDB
    TIFH:  Tunnel Interface handle

MoFRR Information
    MLI:  Multicast leaf index     A:    Active RPF interface
    RI:   RPF interface (or RPF ID) WDI:  Watchdog counter index
------------------------------------------------------------------------------

Source: *               Group: 224.0.0.0       Mask: 24  RPF Int: None
 MGID: 17161     MLI: 288       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5302e3
  1  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5300fc
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17161 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 224.0.1.39      Mask: 32  RPF Int: None
 MGID: 17159     MLI: 286       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5302d9
  1  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5300f2
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17159 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 224.0.1.40      Mask: 32  RPF Int: None
 MGID: 17160     MLI: 287       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5302de
  1  F  F  F  T  F  F  F  F  0x0        0  0    F  F  F  F  F  0x0  0x5300f7
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
  MGID: 17160 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------------
Source: *               Group: 227.0.0.0       Mask: 8   RPF Int: None
 MGID: 17178     MLI: 305       Fabric Slotmask: 0x10      FGID: 0x10
 Parent MLI: 305       IIF Count: 2         AB Rows: 1
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  F  F  F  F  F  F  F  T  0x0        1  1    F  F  F  F  F  0x0  0x5302ed
  1  F  F  F  F  F  F  F  T  0x0        0  0    F  F  F  F  F  0x0  0x530106
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------------
```

```
  MGID: 17178 Mask: 0x1  Old MGID: 0 Old Mask: 0x1
  ------------------------------------------------
Source: *               Group: 232.0.0.0       Mask: 8   RPF Int: None
 MGID: 17162     MLI: 289       Fabric Slotmask: 0x0       FGID: 0x0
  Route Information
  ------------------------------------------------------------------------------
  NP B  S  DC PL PR PF DR BD RI         T  OC   MF TR TE TD CD MI   Base
  ------------------------------------------------------------------------------
  0  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x5302e8
  1  T  F  F  F  F  F  T  F  0x0        0  0    F  F  F  F  F  0x0  0x530101
  ------------------------------------------------------------------------------

  Software MGID Information
  ------------------------------------------------
  MGID: 17162 Mask: 0x0  Old MGID: 0 Old Mask: 0x0
  ------------------------------------------------
RP/0/RSP0/CPU0:RTP-VIKING-MCAST-04#
```

show mfib platform connection

To display the state of connections between MFIB Platform and other dependent components on the linecard, use the **show mfib platform connection** command in EXEC mode.

show mfib platform connection [**location** *node-id*]

Syntax Description

location *node-id*	Specifies the Node ID for an MFIB-designated node.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced.

Usage Guidelines

The command also displays the state of each NP on the line card based on the notifications received from the Resource Manager component.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mfib platform connection** command:

```
RP/0/RSP0/CPU0:router# show mfib platform connection location 0/2/CPU0

LC Type: A9K-8X100GE-L-SE
-------------------------------------------------
Server             Status       Connect Disconnect
-------------------------------------------------
UIDB               connected    1       0
PRM                connected    1       0
MGID FABRIC LIB    connected    1       0
-------------------------------------------------
NP ID: 0, NP State: Running        ; Last Event: Running
NP ID: 1, NP State: Running        ; Last Event: Running
NP ID: 2, NP State: Running        ; Last Event: Running
NP ID: 3, NP State: Running        ; Last Event: Running
-------------------------------------------------
NP Running Mask: 0xf    NP Inactive Mask: 0x0
-------------------------------------------------
```

show mfib platform route statistics

To display platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route, use the **show mfib platform route statistics** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route statistics** [**detail**] [*****] [*source-address*] [*group-address* [*/prefix-length*]] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*****	(Optional) Displays shared tree entries.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
detail	(Optional) Displays a detailed list of the routing database.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware route statistics** command.

Usage Guidelines

Use the **show mfib platform route statistics** command to display the hardware packet and byte counter for a route.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform route statistics** command.

```
RP/0/RSP0/CPU0:router# show mfib platform route statistics location 0/4/CPU0
!! File saved at 16:01:01 EST Wed Feb 14 2018 by root
```

```
LC Type: A9K-8X100GE-SE
------------------------------------------------------------------------------
Legend:
    N:    NP ID                   R:    Received
    F:    Forwarded               P:    Punted to CPU
    ID:   Ingress Drop            ED:   Egress Drop

Source: *  Group: 225.0.0.1  Mask:32
  ------------------------------------------------------------------------------
  NP R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------------
  0 0:0 / 0:0 / 0 / 0 / 0
  1 0:0 / 0:0 / 0 / 0 / 0
  2 0:0 / 0:0 / 0 / 0 / 0
  3 0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------------
  Interface Statistics:
  ------------------------------------------------------------------------------
  C   Interface       F/P/D (packets:bytes)
  ------------------------------------------------------------------------------
  1   Te0/3/0/3/2     0:0 / 0:0 / 0:0
  ------------------------------------------------------------------------------

Source: 23.1.1.2  Group: 225.0.0.1  Mask:64
  ------------------------------------------------------------------------------
  NP R(packets:bytes)/F(packets:bytes)/P(packets)/ID(packets)/ED(packets)
  ------------------------------------------------------------------------------
  0 0:0 / 0:0 / 7 / 0 / 2214994
  1 0:0 / 2215250:243677500 / 7 / 0 / 0
  2 0:0 / 0:0 / 0 / 0 / 0
  3 0:0 / 0:0 / 0 / 0 / 0
  ------------------------------------------------------------------------------
  Interface Statistics:
  ------------------------------------------------------------------------------
  C   Interface       F/P/D (packets:bytes)
  ------------------------------------------------------------------------------
  1   Te0/3/0/3/2     2215246:243677060 / 0:0 / 0:0
  ------------------------------------------------------------------------------
```

show mfib platform route summary

To display summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry, use the **show mfib platform route summary** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route summary location** *node-id*

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
location *node-id*	(Optional) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **show mfib hardware route summary** command.

Usage Guidelines

Use the **show mfib platform summary** command to display hardware information for the route of the node.

The longest-prefix match route is displayed depending on the provided source and group addresses. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib platform route summary** command:

```
RP/0/RSP0/CPU0:router# show mfib platform route summary location 0/3/cpu0

!! File saved at 16:02:02 EST Wed Feb 14 2018 by root
LC Type: A9K-8X100GE-SE
H/W IP Multicast Forwarding Information Base Summary
  No. of (*,G) routes = 7
  No. of (S,G) routes = 3
  No. of (S,G) HW based ECMP-MoFRR routes = 0
  No. of (S,G) HW based TI-MoFRR clone routes (primary/backup) = 0/0
```

This table describes the significant fields shown in the display.

Table 11: show mfib platform route summary Field Descriptions

Field	Description
No. of (*,G) routes	Number of (*,G) routes installed in hardware.

Field	Description
No. of (S,G) routes	Number of (S,G) routes installed in hardware.
No. of (S,G) MoFRR routes	Number of MoFRR (S,G) routes installed in hardware.

clear mfib platform route statistics

To reset all allocated counter values regardless of the Multicast Forwarding Information Base (MFIB) hardware statistics mode (accounting per-prefix or accounting per-prefix forward-only), use the clear mfib platform route statistics command in EXEC mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform route statistics** {**egress** | **ingress** | **ingress-and-egress**} [*****source-address*] [*group-address* [*/prefix-length*]] [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
ingress-and-egress	(Optional) Clears hardware statistics on both the incoming (ingress) and outgoing (egress) routes.
*****	(Optional) Clears shared tree route statistics.
source-address	(Optional) IP address or hostname of the multicast route source.
group-address	(Optional) IP address or hostname of the multicast group.
/ prefix-length	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location	(Optional) Clears route packet counters from the designated node.
node-id	The *node-id* argument is entered in the *rack/slot/module* notation.
all	The **all** keyword clears route packet counters on all nodes

Command Default

If not specified, IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **clear mfib hardware route statistics** command.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs.

The Multicast Forwarding (MFWD) process exists on each line card and assigns hardware counters to each (S, G) route.

To clear the set of counters for (*, G) routes, the MFWD process assigns a single set of counters to count packets that match (*, G) routes. Consequently, the **clear mfib platform route statistics** command must be used in a form that either clears counters on all routes or matches all (*, G) routes.

Note This command only clears MFIB hardware statistics counters. To clear MFIB route packet software counters, use the **clear mfib counter** command.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following command shows how to clear counters by route statistics for all multicast routes on both ingress and egress forwarding engines for the line card 0/1/CPU0:

```
RP/0/RSP0/CPU0:router# clear mfib ipv4 platform route statistics ingress-and-egress location
 0/1/CPU0
```

clear mfib platform resource-counters

To clear global resource counters, use the **clear mfib platform resource-counters** command in EXEC mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform resource-counters** [**location** {*node-id* | **all**}]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location *node-id*	(Optional) Clears global resource counters from the designated node.
all	The **all** keyword clears all global resource counters.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.4.1	This command was introduced. This command replaces **clear mfib hardware resource-counters**

Usage Guidelines

Use the **clear mfib platform resource-counters** to estimate resource usage for an operation.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear all global resource counters:

```
RP/0/RSP0/CPU0:router# clear mfib platform resource-counters location all
```

show mfib interface

To display interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process, use the **show mfib interface** command in EXEC mode.

show mfib [**vrf** *vrf-name*] **ipv4 interface** [*type interface-path-id*] [**detail** | **route**] [**location** *node-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
type	(Optional) Interface type. For more information, use the question mark (?) online help function.
interface-path-id	(Optional) Physical interface or virtual interface. **Note** Use the **show interfaces** command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
detail	(Optional) Specifies detailed information for packet statistics on interfaces.
route	(Optional) Specifies a list of routes associated with the interface. This option is available if an interface *type* and *instance* are specified.
location *node-id*	(Optional) Specifies packet statistics associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mfib interface** command displays counters for the number of packets and bytes that are handled by software switching. Counters for packets processed by hardware are displayed by the appropriate **show mfib hardware** command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib interface** command for the multicast route on node 0/2/CPU0 that is associated with the Gigabit Ethernet interface 0/2/0/2:

```
RP/0/RSP0/CPU0:router# show mfib interface GigE 0/2/0/2 location 0/2/CPU0

Interface : GigE0/2/0/2 (Enabled)
Mcast pkts in : 5839, Mcast pkts out : 0 TTL Threshold : 0 Ref Count : 18
```

The following is sample output from the **show mfib interface** command with the **detail** and **location** keywords specified:

```
RP/0/RSP0/CPU0:router# show mfib interface detail location 0/2/CPU0

Interface : FINT0/2/CPU0 [0x3000000] (Disabled) PHYSICAL Create Unknown Mcast pkts in: 0,
Mcast pkts out: 0 TTL Threshold : 0, VRF ID: 0x60000000, Multicast Adjacency Ref Count: 2,
 Route Count: 0, Handle: 0x3000000 Primary address : 0.0.0.0/32 Secondary address : 0.0.0.0/32


Interface : GigE0/2/0/2 [0x3000900] (Enabled) PHYSICAL Create Rcvd Mcast pkts in: 5844,
Mcast pkts out: 0 TTL Threshold : 0, VRF ID: 0x60000000, Multicast Adjacency Ref Count: 18,
 Route Count: 15, Handle: 0x3000900 Primary address : 112.112.112.203/24 Secondary address
 : 0.0.0.0/32
```

This table describes the significant fields shown in the display.

Table 12: show mfib interface Field Descriptions

Field	Description
Interface	Interface name. Enabled if the interface is configured for multicast routing. The word “PHYSICAL” is displayed if the interface is a nonvirtual interface.
Mcast pkts in	Number of incoming multicast packets entering the interface during software switching.
Mcast pkts out	Number of outgoing multicast packets exiting the interface during software switching.
TTL Threshold	Number of multicast packets that reach the configured multicast time-to-live threshold.
VRF ID	VPN Routing and Forwarding instance ID.
Ref Count	Number of references to this interface structure in the MFIB process.
Primary address	Primary IP address of the interface.
Secondary address	Secondary IP address of the interface.

Related Commands

Command	Description
show mfib hardware interface, on page 64	Displays hardware switching interface information for the Multicast Forwarding Information Base (MFIB) process.

show mfib nsf

To display the state of a nonstop forwarding (NSF) operation for the Multicast Forwarding Information Base (MFIB) line cards, use the **show mfib nsf** command in EXEC mode.

show mfib [**ipv4**] **nsf** [**location** *node-id*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
location *node-id*	(Optional) Specifies the MFIB NSF designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mfib nsf** command displays the current multicast NSF state for the MFIB process contained on all line cards and route processors (RPs) in the router.

For multicast NSF, the state may be one of the following:

- **Normal—**Normal operation: The MFIBs in the card contain only up-to-date MFIB entries.
- **Boot Card Booting—**Card is initializing and has not yet determined its NSF state.
- **Not Forwarding—**Multicast Forwarding Disabled: Multicast routing failed to recover from a failure-induced NSF state prior to the MFIB NSF timeout.
- **Non-stop Forwarding Activated—**Multicast NSF active: The router is operating in NSF mode while attempting to recover from a control-plane failure. In this mode, data is forwarded based on MFIB entries that are either updated by the recovered Multicast Routing Information Base (MRIB), or MFIB entries that were marked stale when NSF mode began. The times remaining until multicast NSF and multicast-unicast NSF expiration are displayed.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib nsf** command:

```
RP/0/RSP0/CPU0:router# show mfib nsf

IP MFWD Non-Stop Forwarding Status:
  NSF Lifetime: 00:15:00

On node 0/1/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:54
```

```
On node 0/3/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:54

On node 0/4/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:53

On node 0/6/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:53
```

This table describes the significant fields shown in the display.

Table 13: show mfib nsf Field Descriptions

Field	Description
IP MFWD Non-Stop Forwarding Status	MFIB NSF status of each node in the system: booting, normal, not forwarding, or activated.
NSF Time Remaining	If MSB NSF is activated, the time remaining until NSF fails and all routes are deleted displays. Before timeout, MRIB signals that NSF (in the control plane) is finished and new, updated routes are populated in the MFIB (which makes the transition to Normal status).

Related Commands

Command	Description
nsf lifetime (IGMP)	Configures the maximum time for the NSF timeout value under IGMP.
nsf (multicast) , on page 50	Configures the NSF capability for the multicast routing system.
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.
show igmp nsf	Displays the state of NSF operation in IGMP.
show mrib nsf, on page 173	Displays the state of NSF operation in the MRIB.
show pim nsf	Displays the state of NSF operation for PIM.

show mfib route

To display route entries in the Multicast Forwarding Information Base (MFIB), use the **show mfib route** command in EXEC mode.

show mfib [**vrf** *vrf-name*] **ipv4 route** [**rate** | ***source-IP-address** | *group-IP-address*/**prefix-length** | **detail** | **summary** | **location** *node-id*]

Syntax Description

*****	(Optional) Display shared tree entries.
source-IP-address	(Optional) IP address or hostname of the multicast route source. Format is: *A.B.C.D*
group-IP-address	(Optional) IP address or hostname of the multicast group. Format is: *A.B.C.D*
/prefix-length	(Optional) Group IP prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). Format is: *A.B.C.D/length*
vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Specifies detailed route information.
location *node-id*	(Optional) Specifies an MFIB-designated node.
rate	(Optional) Displays individual (S, G) rates.
sources-only	(Optional) Restricts display of any shared-tree entries.
summary	(Optional) Displays a brief list of the routing database.
tech-support	(Optional) Displays technical support information.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

All entries in the MFIB table are derived from the Multicast Routing Information Base (MRIB). The flags have the same connotation as in the MRIB. The flags determine the forwarding and signaling behavior according to a set of forwarding rules for multicast packets. In addition to the list of interfaces and flags, each

route entry shows various counters. Byte count is the number of total bytes forwarded. Packet count is the number of packets received for this entry.

The **show mfib counter** command displays global counters independent of the routes.

This command displays counters for the number of packets and bytes that are handled by software switching. Counters for packets processed by hardware are displayed by the appropriate **show mfib hardware** command.

The command displays the cumulative rates per route for all line cards in the Multicast Forwarding Information Base (MFIB) table when the **rate** keyword is used with the source and group IP addresses.

The show mfib route rate command is not supported on interfaces such as bundle virtual interfaces and Bridge Group virtual interfaces (BVIs).

The command displays the rate per route for one line card in Multicast Forwarding Information Base (MFIB) table when the **statistics** keyword is used.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib route** command with the **location** keyword specified (the output fields are described in the header):

```
RP/0/RSP0/CPU0:router# show mfib route location 0/1/CPU0

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
  IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
  ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
  MH - MDT interface handle, CD - Conditional Decap,
  DT - MDT Decap True
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
  NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
  EG - Egress, EI - Encapsulation Interface, MI - MDT Interface
Forwarding Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other

(*,224.0.0.0/24),   Flags:  D
  Up: 02:16:52
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0

(*,224.0.1.39),   Flags:  S
  Up: 02:16:52
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0

(*,224.0.1.40),   Flags:  S
  Up: 02:16:52
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0

(*,227.0.0.1),   Flags:  C
  Up: 02:16:51
  Last Used: 02:16:50
```

```
  SW Forwarding Counts: 282/0/0
  SW Failure Counts: 205/0/0/0/0
  GigabitEthernet0/0/0/4 Flags:  NS EG, Up:02:16:46
  GigabitEthernet0/0/0/8 Flags:  NS EG, Up:02:16:50
  GigabitEthernet0/0/0/6 Flags:  NS EG, Up:02:16:50

(4.0.0.2,227.0.0.1),   Flags:
  Up: 02:16:50
  Last Used: 00:00:12
  SW Forwarding Counts: 125/0/0
  SW Failure Counts: 0/0/0/0/0
  GigabitEthernet0/0/0/8 Flags:  NS EG, Up:02:16:50
  GigabitEthernet0/0/0/6 Flags:  NS EG, Up:02:16:50
  GigabitEthernet0/0/0/4 Flags:  A EG, Up:02:16:50

(*,232.0.0.0/8),   Flags:  D
  Up: 02:16:52
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0
```

The following is sample output from the **show mfib route** command with the **summary** and **location** keywords specified:

```
RP/0/RSP0/CPU0:router# show mfib route summary location 0/0/CPU0
IP Multicast Forwarding Information Base Summary for VRF default
  No. of (*,G) routes = 5
  No. of (S,G) routes = 1
```

The following is sample output from the **show mfib route** command with the **statistics** and **location** keywords specified. If the hardware counters show N/A, it means no hardware statistic blocks were assigned to the route. However, routes may show that both hardware and software statistic blocks are assigned. The output fields are described in the header.

```
RP/0/RSP0/CPU0:router# show mfib route statistics location 0/0/CPU0
IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
  IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
  ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
  MH - MDT interface handle, CD - Conditional Decap,
  DT - MDT Decap True
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
  NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
  EG - Egress, EI - Encapsulation Interface, MI - MDT Interface
SW/HW Forwarding Counts: Packets in/Packets out/Bytes out
SW Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other
HW Drop Counts: Ingress / Egress
HW Forwarding Rates: bps In/pps In/bps Out/pps Out

(*,224.0.0.0/24),   Flags:  D
  Up: 02:21:15
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 0/0/0
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A

(*,224.0.1.39),   Flags:  S
  Up: 02:21:15
  Last Used: never
  SW Forwarding Counts: 0/0/0
```

```
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 0/0/0
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A

(*,224.0.1.40),   Flags:  S
  Up: 02:21:15
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 0/0/0
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A

(*,227.0.0.1),   Flags:  C
  Up: 02:21:14
  Last Used: 02:21:14
  SW Forwarding Counts: 282/0/0
  SW Failure Counts: 205/0/0/0
  HW Forwarding Counts: 0/0/0
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A
  GigabitEthernet0/0/0/4 Flags:  NS EG, Up:02:21:10
  GigabitEthernet0/0/0/8 Flags:  NS EG, Up:02:21:14
  GigabitEthernet0/0/0/6 Flags:  NS EG, Up:02:21:14

(4.0.0.2,227.0.0.1),   Flags:
  Up: 02:21:14
  Last Used: 00:01:06
  SW Forwarding Counts: 128/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 8474282/8474283/389817018
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A
  GigabitEthernet0/0/0/8 Flags:  NS EG, Up:02:21:14
  GigabitEthernet0/0/0/6 Flags:  NS EG, Up:02:21:14
  GigabitEthernet0/0/0/4 Flags:  A EG, Up:02:21:14

(*,232.0.0.0/8),   Flags:  D
  Up: 02:21:15
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 0/0/0
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A
```

The following is a sample output for MoFRR enabled route without and with the detail keyword:

```
RP/0/RSP0/CPU0:router# show mfib route

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
  IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
  ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
  MH - MDT interface handle, CD - Conditional Decap,
  DT - MDT Decap True, EX - Extranet
  MoFE - MoFRR Enabled, MoFS - MoFRR State
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
  NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
  EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
  EX - Extranet, A2 - Secondary Accept
Forwarding/Replication Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other
```

```
(20.20.20.1,225.0.0.1),   Flags:  MoFE MoFS
  Up: 03:22:30
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Replication Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0
  GigabitEthernet0/0/0/8 Flags:  A, Up:03:22:30
  GigabitEthernet0/0/0/18 Flags:  A2, Up:03:22:30
  GigabitEthernet0/0/0/28 Flags:  NS, Up:03:22:30

(20.20.20.1,225.0.0.2),   Flags:  MoFE MoFS
  Up: 03:22:30
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Replication Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0
  GigabitEthernet0/0/0/8 Flags:  A, Up:03:22:30
  GigabitEthernet0/0/0/18 Flags:  A2, Up:03:22:30
  GigabitEthernet0/0/0/28 Flags:  NS, Up:03:22:30
```

In the above command, A flag represents the primary RPF of the MoFRR route, and A2 flag represents the backup RPF of the MoFRR route.

```
RP/0/RSP0/CPU0:router# show mfib route detail

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
  IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
  ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
  MH - MDT interface handle, CD - Conditional Decap,
  DT - MDT Decap True, EX - Extranet
  MoFE - MoFRR Enabled, MoFS - MoFRR State
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
  NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
  EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
  EX - Extranet, A2 - Secondary Accept
Forwarding/Replication Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other
(20.20.20.1,225.0.0.1),   Flags:  MoFE MoFS
  Up: 03:25:31
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Replication Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0
  Route ver: 0x4a13
  MVPN Info :-
    MDT Handle: 0x0, MDT Probe:N [N], Rate:N, Acc:N
    MDT SW Ingress Encap V4/V6, Egress decap: 0 / 0, 0
  MOFRR State: Inactive Sequence No 1
  GigabitEthernet0/0/0/8 Flags:  A, Up:03:25:31
  GigabitEthernet0/0/0/18 Flags:  A2, Up:03:25:31
  GigabitEthernet0/0/0/28 Flags:  NS, Up:03:25:31
(20.20.20.1,225.0.0.2),   Flags:  MoFE MoFS
  Up: 03:25:31
  Last Used: never
  SW Forwarding Counts: 0/0/0
  SW Replication Counts: 0/0/0
  SW Failure Counts: 0/0/0/0/0
  Route ver: 0x443e
  MVPN Info :-
    MDT Handle: 0x0, MDT Probe:N [N], Rate:N, Acc:N
    MDT SW Ingress Encap V4/V6, Egress decap: 0 / 0, 0
  MOFRR State: Inactive Sequence No 1
```

```
GigabitEthernet0/0/0/8 Flags:  A, Up:03:25:31
GigabitEthernet0/0/0/18 Flags:  A2, Up:03:25:31
GigabitEthernet0/0/0/28 Flags:  NS, Up:03:25:31
```

The detail option illustrates the MoFRR state of each MoFRR route. At any moment, only one RPF forwards the traffic to the egress. The inactive state means the primary RPF forwards the traffic to the egress. The active state means that the backup RPF forwards the traffic to the egress. The sequence number reflects the number of switchovers of the MoFRR route.

Related Commands

Command	Description
show mfib counter, on page 61	Displays Multicast Forwarding Information Base (MFIB) counter statistics for packets that have dropped.
show mfib hardware route accept-bitmap, on page 80	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route olist, on page 97	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.
show mfib interface, on page 149	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mrib route, on page 189	Displays all entries in the Multicast Routing Information Base (MRIB).

show mfib table-info

To display Multicast Forwarding Information Base (MFIB) table information, use the **show mfib table-info** command in EXEC mode.

show mfib [**ipv4** | **ipv6**] **table-info** {*table-idvrf-name*} [**local** | **remote**] [**location** *node-id*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
table-id	Specifies the table identifier. Range is 0 to 4294967295.
vrf-name	Specifies the VRF name.
local	Specifies local tables only.
remote	Specifies remote tables only.
location *node-id*	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib table-info** command:

```
RP/0/RSP0/CPU0:router# show mfib table-info table-id location 0/0/CPU0

Table Name           : default
VRid/TID/VID         : 0x0 / 0xe0000000 / 0x60000000
Table type           : TBL_TYPE_TID
Active/Linked        : Y / Y
Prev Table ID        : 0x0
Location             : Local
Local ifcount        : 16
Default MDT Encap    : (*, */32)
MDT Master LC        : N
Loopback (Encap Src) : 0x0 (Ha0x0)
```

```
Local EG intf cnt    : 6
Data MDT             : Acl - (-), All vrf routes N, 0 Kbps


RP/0/RSP0/CPU0:router#show mfib table-info vrf 101

Table Name           : vrf15
VRid/TID/VID         : 0x0 / 0xe000000f / 0x6000000f
Table type           : TBL_TYPE_NAME_VID
Active/Linked        : Y / Y
Prev Table ID        : 0x0
Location             : Local
Local ifcount        : 2
Child routes         : (5.5.5.5, 225.101.1.15/32)

Default MDT Handle   : 0x0 (Ha0x0)


MDT Master LC        : Y
Loopback (Encap Src) : 0x9000180 (Loopback0)
Local EG intf cnt    : 508
Data MDT             : Acl - (-), All vrf routes N, 0 Kbps
```

This table describes the significant fields shown in the display.

Table 14: show mfib table-info Field Descriptions

Field	Description
Table Name	Name of the MFIB table.
VRid/TID/VID	Table identifiers.
Table type	Type of MFIB table.
Active/Linked	Table is active and linked.
Location	Location of the MFIB table.
Local ifcount	Local interface count.
Child routes	Child routes shows the number of extranet routes in receiver VRFs that reference this source VRF.
Default MDT Encap	Default MDT encapsulation.
Default MDT Handle	Default MDT interface handle for this VRF.
MDT Master LC	Field contains "Y" if this line card is a master line card for this VRF.
Loopback (Encap Src)	Loopback (encapsulation source).
Local EG intf cnt	Shows the number of local egress interfaces for this VRF and location.
Data MDT	Routes for which multicast data for a multicast distribution tree (MDT) was triggered.

show mhost default-interface

To display the active default interface for the Multicast Host (MHost) process, use the **show mhost default-interface** command in the appropriate mode .

show mhost ipv4 default-interface

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs.

The **show mhost default-interface** command is used to show both the configured and active MHost default interfaces. The configured interface is the one specified by the **mhost default-interface** command; otherwise, the configured interface is displayed as none.

The active interface is the one currently being used as the default. The active interface may differ from the one configured when multicast routing is enabled and the configured interface is not operational. This command is useful when applications such as ping, or MTrace are not functioning as expected.

Task ID

Task ID	Operations
network	read

Examples

The following is sample output for the **show mhost default-interface** command that shows that loopback interface 0 was configured as the MHost default interface, and it is the active default interface:

```
RP/0/RSP0/CPU0:router# show mhost default-interface

mhost configured default interface is 'Loopback0'
mhost active default interface is 'Loopback0'
```

Related Commands

Command	Description
mhost default-interface, on page 44	Configures the default interface for IP multicast transmission and reception to and from the host stack.

show mhost groups

To display various multicast groups joined directly on the interface, use the **show mhost groups** command in the appropriate mode.

show mhost [**ipv4**] **groups** *type interface-path-id* [**location** *node-id*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
location *node-id*	(Optional) Specifies a designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mhost groups** command is used to display the groups joined by applications and verifies that the MHost application is functioning properly.

Task ID

Task ID	Operations
network	read

Examples

The following is sample output from the **show mhost groups** command that shows the MHost groups 239.1.1.1, 224.0.0.22, 224.0.0.2, 224.0.0.1, 224.0.0.13, and 224.0.1.40 have joined on loopback 0 interface:

```
RP/0/RSP0/CPU0:router# show mhost groups loopback 0

Loopback 0
239.1.1.1 : includes 1, excludes 0, mode INCLUDE
33.3.3.3 : includes 1, excludes 0, active in INCLUDE filter
224.0.0.22 : includes 0, excludes 1, mode EXCLUDE
```

```
<no source filter>
224.0.0.2 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.0.1 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.0.13 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.1.40 : includes 0, excludes 2, mode EXCLUDE
<no source filter>
```

This table describes the significant fields shown in the display.

Table 15: show mhost groups Field Descriptions

Field	Description
includes	Number of source addresses in the include list.
excludes	Number of source addresses in the exclude list.
mode	Multicast socket filter mode: include or exclude.
33.3.3.3	Source address list to be included or excluded based on the multicast filter mode.

Related Commands

Command	Description
show mfib hardware route accept-bitmap, on page 80	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route olist, on page 97	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route statistics, on page 108	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the packet and byte counters for each route.
show mfib hardware route summary, on page 112	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mrib client

To display the state of the Multicast Routing Information Base (MRIB) client connections, use the **show mrib client** command in the appropriate mode.

show mrib [**vrf** *vrf-name*] **ipv4 client** [**filter**] [*client-name*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
filter	(Optional) Displays route and interface level flag changes that various MRIB clients have registered and shows what flags are owned by the MRIB clients.
client-name	(Optional) Name of a multicast routing protocol that acts as a client of MRIB, such as Protocol Independent Multicast (PIM) or Internet Group Management Protocol (IGMP).

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib client** command using the **filter** option:

```
RP/0/RSP0/CPU0:router# show mrib client filter

IP MRIB client-connections
igmp:417957 (connection id 0)
 ownership filter:
  interface attributes: II ID LI LD
  groups:
   include 0.0.0.0/0
  interfaces:
   include All
pim:417959 (connection id 1)
 interest filter:
  entry attributes: E
  interface attributes: SP II ID LI LD
  groups:
   include 0.0.0.0/0
```

```
  interfaces:
   include All
 ownership filter:
  entry attributes: L S C IA IF D
  interface attributes: F A IC NS DP DI EI
  groups:
   include 0.0.0.0/0
  interfaces:
   include All
bcdl_agent:1 (connection id 2)
 interest filter:
  entry attributes: S C IA IF D
  interface attributes: F A IC NS DP SP EI
  groups:
   include 0.0.0.0/0
  interfaces:
   include All
 ownership filter:
  groups:
   include 0.0.0.0/0
  interfaces:
   include All
```

This table describes the significant fields shown in the display.

Table 16: show mrib client Field Descriptions

Field	Description
igmp	Name of the client.
417957	Personal identifier (PID) or a unique ID assigned by MRIB.
(connection id 0)	Unique client connection identifier.
ownership filter:	Specifies all the route entry and interface-level flags that are owned by the client. As the owner of the flag, only the client can add or remove the flag. For example, only the Internet Group Management Protocol (IGMP) client can add the II flag on an interface. MRIB does not allow a non-owner to register or modify the same flag.
groups: include 0.0.0.0/0interfaces: include All	Groups and interfaces registered by the clients consisting of two lists. One is an include list (items for which the client requests to be notified.) The use of "All" implies all interfaces and 0.0.0.0/0 to indicate all groups. Not shown in this example is the exclude list. This list contains items for which the client requests not to be notified when modifications occur.
interface attributes: II ID LI LD	Interface-level flags set on the interface belong to a route.
interest filter:	Specifies all the flags, groups, and interfaces from which the client requests information. When a flag of interest for a client is modified, the client is notified.

Field	Description
entry attributes: S C IA IF D	Entry-level flags that are set on the route.

Related Commands

Command	Description
show mfib nsf, on page 151	Displays the state of a nonstop forwarding (NSF) operation for the Multicast Forwarding Information Base (MFIB) line cards.
show mfib route, on page 153	Displays route entries in the Multicast Forwarding Information Base (MFIB).
show mrib nsf, on page 173	Displays the state of nonstop forwarding (NSF) operation in the Multicast Routing Information Base (MRIB).

show mrib bvi

To display the Bridge Virtual Interface (BVI) details in the Multicast Routing Information Base (MRIB), use the **show mrib bvi** command EXEC mode.

show mrib bvi [**interface** | **route**] **bvi***bvi_number*

Syntax Description

interface	MRIB BVI interface.
route	BVI route entry.
bvi_number	BVI interface number. Range is from 1 to 65535.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Usage Guidelines

EXEC mode

Task ID

Task ID	Operation
multicast	read

Example

This example shows how to run the **show mrib bvi** command:

```
RP/0/RSP0/CPU0:router # show mrib bvi route bvi 200
```

show mrib mpls forwarding

To display the Multicast Routing Information Base (MRIB) MPLS forwarding table information of all tunnels, use the **show mrib mpls forwarding** command in

EXEC mode

.

show mrib mpls forwarding [**detail** | **labels** | **s2l** | **source** | **summary** | **tunnels**]

Syntax Description

detail	Provides the detail information of each tunnel.
labels	Filters based on label.
s2l	Filters based on s2l.
source	Filters based on source PE address.
summary	Displays the summary output of entries.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mrib mpls forwarding** command:

```
RP/0/RSP0/CPU0:router# show mrib mpls forwarding

LSP information (RSVP-TE) :
  Name: tunnel-mte26 Role: Head State: binding
    TUNNEL-ID: 26  P2MP-ID: 26  LSP-ID: 10012
    Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

      Incoming Label       : (16008)
      Transported Protocol : IPv4
      Explicit Null        : IPv6 Explicit Null
      IP lookup            : enabled

      Outsegment Info #1 [Head/Push]:
```

```
       Outgoing Label: 16008  Outgoing IF: GigabitEthernet0/0/0/5(P) Outgoing Node ID: 0x1
  Nexthop: 192.14.1.44


LSP information (RSVP-TE) :
  Name: tunnel-mte27 Role: Head State: binding
    TUNNEL-ID: 27  P2MP-ID: 27  LSP-ID: 10012
    Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

      Incoming Label       : (16007)
      Transported Protocol : IPv4
      Explicit Null        : IPv6 Explicit Null
      IP lookup            : enabled
      Platform information : FGID: 51075, 51076 frr_slotmask: 0x1

      Outsegment Info #1 [Head/Push]:
        Outgoing Label: 16007  Outgoing IF: GigabitEthernet0/0/0/5(P) Outgoing Node ID: 0x1
  Nexthop: 192.14.1.44
```

The following is a sample output from the **show mrib mpls forwarding** command with the detail keyword:

```
RP/0/RSP0/CPU0:router# show mrib mpls forwarding tunnel 27 detail

LSP information (RSVP-TE) :
  Name: ------ Role: Bud
    TUNNEL-ID: 27  P2MP-ID: 27  LSP-ID: 10002
    Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

      Incoming Label       : 16001
      Transported Protocol : IPv4
      Explicit Null        : IPv6 Explicit Null
      IP lookup            : enabled
      Platform information : FGID: 44045, 44046 frr_slotmask: 0x24

      Outsegment Info #1 [Tail/Pop]:
        No info.
      Outsegment Info #2 [Mid/Swap]:
        Outgoing Label: 16001  Outgoing IF: GigabitEthernet0/5/0/6(P) Outgoing Node ID:
0x51  Nexthop: 192.168.12.2
      Outsegment Info #3 [Mid/Swap]:
        Outgoing Label: 16001  Outgoing IF: GigabitEthernet0/2/0/4(P) Outgoing Node ID:
0x21  Nexthop: 192.168.13.2

RP/0/RSP0/CPU0:router# show mrib mpls forwarding tunnel 26 detail

LSP information (RSVP-TE) :
  Name: ------ Role: Tail
    TUNNEL-ID: 26  P2MP-ID: 26  LSP-ID: 10012
    Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

      Incoming Label       : 16008
      Transported Protocol : IPv4
      Explicit Null        : IPv6 Explicit Null
      IP lookup            : enabled
      Platform information : FGID: 51082, 51083 frr_slotmask: 0x0
Outsegment Info #1 [Tail/Pop]:
        No info.
```

show mrib mpls route

To display the Multicast Routing Information Base (MRIB) multicast groups to tunnels mappings, use the **show mrib mpls route** command in EXEC mode.

show mrib mpls route [**interface** | **summary**]

Syntax Description

interface	(Optional) Specify the type of interface.
summary	(Optional) Displays the summary information.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

This is a sample output from the **show mrib mpls route** command:

```
RP/0/RSP0/CPU0:router# show mrib mpls route

Tunnel Interface: tunnel-mte28
    (192.19.1.9, 239.232.2.1) (192.19.1.9, 239.232.2.2) (192.19.1.9, 239.232.2.3)
Tunnel Interface: tunnel-mte27
    (192.19.1.9, 239.232.1.1) (192.19.1.9, 239.232.1.2) (192.19.1.9, 239.232.1.3)
Tunnel Interface: tunnel-mte26
    (192.19.1.9, 239.232.0.1) (192.19.1.9, 239.232.0.2) (192.19.1.9, 239.232.0.3)
```

show mrib mpls traffic-eng fast-reroute

To display the Multicast Routing Information Base (MRIB) MPLS traffic engineering fast reroute information, use the **show mrib mpls traffic-eng fast-reroute** command in EXEC mode

.

show mrib mpls traffic-eng fast-reroute database {**backup-interface** | **labels** | **role** | **state** | **summary**}

Syntax Description

database	Displays the fast reroute database information.
backup-interface	(Optional) Filter based on backup outgoing interface
labels	(Optional) Filter based on incoming label
role	(Optional) Filter based on LSPs with specified role
state	(Optional) Filter based on LSPs with specified FRR (fast-reroute) state
summary	(Optional) Summary of total active and ready FRR states in MRIB

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

This is a sample output from the **show mrib mpls traffic-eng fast-reroute** command:

```
RP/0/RSP0/CPU0:router# show mrib mpls traffic-eng fast-reroute database

LSP midpoint  item frr information:
ExtTunId/TunId/P2MPId/LSPId   In Lbl  Out intf/Lbl      FRR intf/Lbl   Status
-----------------------       ------  ---------------   ------------   -----
192.192.5.3/3001/3001/10002   16513   Te0/5/0/0:17028   tt21:17028     Ready
                                      Te0/5/0/5:1048564 tt24:1048564   Ready
192.192.5.3/3002/3002/10002   16514   Te0/5/0/0:17029   tt21:17029     Ready
                                      Te0/5/0/5:1048565 tt24:1048565   Ready
192.192.5.3/3003/3003/10002   16515   Te0/5/0/0:17030   tt21:17030     Ready
                                      Te0/5/0/5:1048566 tt24:1048566   Ready
192.192.5.3/3004/3004/10002   16516   Te0/5/0/0:17031   tt21:17031     Ready
                                      Te0/5/0/5:1048567 tt24:1048567   Ready
```

```
192.192.5.3/3005/3005/10002   16517   Te0/5/0/0:17032   tt21:17032     Ready
                                      Te0/5/0/5:1048568 tt24:1048568   Ready
192.192.5.3/3006/3006/10002   16518   Te0/5/0/0:17033   tt21:17033     Ready
                                      Te0/5/0/5:1048569 tt24:1048569   Ready
192.192.5.3/3007/3007/10002   16519   Te0/5/0/0:17034   tt21:17034     Ready
```

show mrib nsf

To display the state of nonstop forwarding (NSF) operation in the Multicast Routing Information Base (MRIB), use the **show mrib nsf** command in the appropriate mode.

show mrib ipv4 nsf

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **show mrib nsf** command displays the current multicast NSF state for the MRIB. The state may be normal or activated for NSF. The activated state indicates that recovery is in progress due to a failure in MRIB or Protocol Independent Multicast (PIM). The total NSF timeout and time remaining are displayed until NSF expiration.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib nsf** command:

```
RP/0/RSP0/CPU0:router# show mrib nsf

IP MRIB Non-Stop Forwarding Status:
Multicast routing state: Non-Stop Forwarding Activated
NSF Lifetime: 00:03:00
NSF Time Remaining: 00:01:40
```

This table describes the significant fields shown in the display.

Table 17: show mrib nsf Field Descriptions

Field	Description
Multicast routing state	Multicast NSF status of the MRIB (Normal or NSF Activated).
NSF Lifetime	Timeout for MRIB NSF, computed as the maximum of the PIM and Internet Group Management Protocol (IGMP) NSF lifetimes, plus 60 seconds.

Field	Description
NSF Time Remaining	If MRIB NSF state is activated, the time remaining until MRIB reverts to Normal mode displays. Before this timeout, MRIB receives notifications from IGMP and PIM, triggering a successful end of NSF and cause the transition to normal state. If notifications are not received, the timer triggers a transition back to normal mode, causing new routes to download to MFIB and old routes to be deleted.

Related Commands

Command	Description
nsf (multicast) , on page 50	Configures the NSF capability for the multicast routing system.
nsf lifetime (IGMP)	Configures the maximum time for the NSF timeout value under IGMP .
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.
show igmp nsf	Displays the state of NSF operation in IGMP.
show mfib nsf	Displays the state of NSF operation in the MFIB line cards.
show pim nsf	Displays the state of NSF operation for PIM.

show mrib nsr end

To display nonstop routing (NSR) operation in the Multicast Routing Information Base (MRIB), use the **show mrib nsr end** command in the appropriate mode.

show mrib ipv4| ipv6 nsr end

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.2.2	This command was introduced.

Usage Guidelines

Use this command after an NSR event (for example, RPFO or a process restart) to determine when each of the MRIB or MRIB6's NSR clients finished re-downloading the information to the MRIB and if any previously downloaded information was purged in the process.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib nsr end** command:

```
RP/0/RSP0/CPU0:router# show mrib nsr end
Time                Client       Idx    Change
Oct 17 18:43:36    Membership   1      N
Oct 17 18:43:40    Routing      2      Y
```

This table describes the significant fields shown in the display.

Table 18: show mrib nsr end Field Descriptions

Field	Description
Time	The time at which the client finished downloading information back to MRIB or MRIB6 after the NSR event.
Client	Client type (Membership - IGMP/MLD, Routing - PIM/PIM6)
Change	Was there an route or interface attribute purge Y - yes, N - no

Related Commands

Command	Description
show msdp nsr	Displays the state of NSR operation for MSDP.
show igmp nsr	Displays the state of NSR operation for IGMP.
show pim nsr	Displays the state of NSR operation for PIM.

show mrib platform bundle

To display bundle information for the Multicast Routing Information Base (MRIB), use the **show mrib platform bundle** command in EXEC mode.

show mrib platform bundle [{hash ip *ip-address* **| hash label** *label-name* **} | member-db** *member-db-name* **}]**

Syntax Description

hash	The hash option is used to preview which specific bundle member will be chosen for a given multicast route or label before the route is created in PIM or MRIB. (Optional) hash ip *ip-address*Enter the hash *(*, G)* or *(S,G)* IP address to preview load balancing information. Enter the source IP address followed by the group IP address. For the *(*, G)* option where there is no source IP address, enter *0.0.0.0* as the source IP address. (Optional) hash label *label-name*Enter the hash label name.

member-db	Displays the current bundle member database in MRIB platform.
	To see all the variable options for this keyword, use the question mark (?) online help function.
	`show mrib platform bundle member-db ?`
	`ATM  ATM Network Interface(s) | short name is ATM`
	`BVI  Bridge-Group Virtual Interface`
	`Bundle-Ether  Aggregated Ethernet interface(s) | short name is BE`
	`Bundle-POS  Aggregated POS interface(s) | short name is BP`
	`……`
	`……..`

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 6.2.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show platform bundle member-db bundle-ether 1** command:

```
#show mrib platform bundle member-db bundle-ether 1
------------------------------------------------------------
Bundle-Ether1 (0x20003a0)
------------------------------------------------------------
```

```
  No. of members (attached): 2
  No. of members (active):   2
  No. of members (weighted): 2
  Num Dep Routes:            1
  Num Dep Labels:            0
  Num Dep VIFs:              0
------------------------------------------------------------
  Member list:
   GigabitEthernet0/1/1/7 (0x6000480) [State: ACTIVE, LON: 0, UL ID: 0, W: 1]
   GigabitEthernet0/1/1/3 (0x6000380) [State: ACTIVE, LON: 1, UL ID: 1, W: 1]
  Sorted Active Member list:
   [LON: 0, W: 1] GigabitEthernet0/1/1/7 (0x6000480)
   [LON: 1, W: 1] GigabitEthernet0/1/1/3 (0x6000380)
  Weighted Active Member list:
   [LON: 0, W: 1] GigabitEthernet0/1/1/7 (0x6000480)
   [LON: 1, W: 1] GigabitEthernet0/1/1/3 (0x6000380)
```

Examples

The following example shows a sample output of **show mrib platform bundle hash** command:

```
#show mrib platform bundle hash ip 225.1.1.1 10.1.1.1 bundle-ether 1 detail

==================================================
(Source, Group):  (10.1.1.1,225.1.1.1)
Bundle interface: Bundle-Ether1 (0x20003a0)
Bundle member:    GigabitEthernet0/1/1/7 (0x6000480)
Raw Hash (32b):   0x9942ad6a
Lag Hash (12b):   0x096a
Member index:     0

==================================================
------------------------------------------------------------
Bundle-Ether1 (0x20003a0)
------------------------------------------------------------
  No. of members (attached): 2
  No. of members (active):   2
  No. of members (weighted): 2
  Num Dep Routes:            1
  Num Dep Labels:            0
  Num Dep VIFs:              0
------------------------------------------------------------
  Member list:
   GigabitEthernet0/1/1/7 (0x6000480) [State: ACTIVE, LON: 0, UL ID: 0, W: 1]
   GigabitEthernet0/1/1/3 (0x6000380) [State: ACTIVE, LON: 1, UL ID: 1, W: 1]
  Sorted Active Member list:
   [LON: 0, W: 1] GigabitEthernet0/1/1/7 (0x6000480)
   [LON: 1, W: 1] GigabitEthernet0/1/1/3 (0x6000380)
  Weighted Active Member list:
   [LON: 0, W: 1] GigabitEthernet0/1/1/7 (0x6000480)
   [LON: 1, W: 1] GigabitEthernet0/1/1/3 (0x6000380)

==================================================
```

show mrib platform interface

To display interface-related information used in the Multicast Routing Information Base (MRIB) process use the **show mrib platform interface** command in EXEC mode.

show mrib platform bundle [{detail location *rsp-location* **| detail |** *begin* | *exclude* | *file* | *include* | *utility* **} | {location** *rsp-location* **| } {|** *begin* | *exclude* | *file* | *include* | *utility* | **}]**

Syntax Description

detail	Displays detailed information about connections.
	(Optional) detail location *rsp-location* Enter the RSP location name.
	(Optional) detail | *begin* Begins with the line that matches.
	(Optional) detail | *exclude* Excludes the lines that match.
	(Optional) detail | *file* Saves the configuration.
	(Optional) detail | *include* Includes lines that match.
	(Optional) detail | *begin* Lists a set of common UNIX utilities.
location	Specifies the location of the platform connections.
	(Optional) location *rsp-location* Enter the RSP location name.
	(Optional) location | *begin* Begins with the line that matches.
	(Optional) location | *exclude* Excludes the lines that match.
	(Optional) location | *file* Saves the configuration.
	(Optional) location | *include* Includes lines that match.
	(Optional) location | *begin* Lists a set of common UNIX utilities.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show mrib platform connections** command:

```
#show mrib platform connections |
```

```
begin LINE | utility wc
Wed Aug 30 00:48:43.482 EDT
       23       69      858
```

show mrib platform regdb

To display regulatory the core registration database information used in the platform-specific part of the Multicast Routing Information Base (MRIB) process, use the **show mrib platform regdb** command in EXEC mode.

show mrib platform regdb [{all detail location *location-name* **| all detail |** *begin* | *exclude* | *file* | *include* | *utility* | **}** | **{all location** *location-name* | **| } { all |** *begin* |*exclude* | *file* |*include* | *utility* | **} | { label** *next-hop-IP-address* **} | { pwhe** *next-hop-IP-address* **| { tunnel** *next-hop-IP-address* **}]**

Syntax Description

all	Displays all the core regdb entries in the regulatory platform database. (Optional) all detail location *location-name* Displays the location details. (Optional) all detail | *begin* Begins with the line that matches. (Optional) all detail | *exclude* Excludes the lines that match. (Optional) all detail | *file* Saves the configuration. (Optional) all detail | *include* Includes lines that match. (Optional) all detail | *utility* Lists a set of common UNIX utilities. (Optional) all location | *location-name* Displays the location details.
label	Displays all core information in the platform-specific regdb related to P2MP label, based on the next-hop IP Address. (Optional) label *next-hop-IP-address* Enter the next-hop IP address.
pwhe	Displays all core information in the platform-specific regdb related to PWHE interface, based on the next-hop IP Address. (Optional) pwhe *next-hop-IP-address* Enter the next-hop IP address.
tunnel	Displays all core information in the platform-specific regdb related to GRE tunnel interfaces, based on the next-hop IP Address. (Optional) tunnel *next-hop-IP-address* Enter the next-hop IP address.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show mrib platform regdb pwhe** command:

```
#show mrib platform regdb pwhe 162.104.38.129
------------------------------
NH Type: LABEL
NH IP address: 162.104.38.129
NH VRF ID: 0xe0000000
IDB Refcount: 1
ECD Present: Y
ECD Length: 44360
RegDB Handle: 0x120ab460
```

show mrib platform resources

To display resource counters for the platform-specific part of the Multicast Routing Information Base (MRIB) process, use the **show mrib platform resources** command in EXEC mode.

show mrib platform resources [{memory detail location *location-name* **| memory detail |** *begin* | *exclude* | *file* | *include* | *utility* **} | {memory location** *location-name* | **| } {memory** *begin* | *exclude* |*file* | *include* | *utility* **}**

Syntax Description

memory	Displays the memory resources allocated.
	(Optional) memory detail location *location-name* Displays the location details.
	(Optional) memory detail | *begin* Begins with the line that matches.
	(Optional) memory detail | *exclude* Excludes the lines that match.
	(Optional) memory detail | *file* Saves the configuration.
	(Optional) memory detail | *include* Includes lines that match.
	(Optional) memory detail | *utility* Lists a set of common UNIX utilities.
	(Optional) memory location *location-name* Displays location details.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show mrib platform resources memory** command:

```
#show mrib platform resources memory
------------------------------------------------------------------------
Memory alloc stats
------------------------------------------------------------------------
   Type                Allocated       Freed       Delta        Size
------------------------------------------------------------------------
route entry                  258         252           6         288
intf to lc                    43          42           1          64
P2MP entry                     0           0           0           0
```

```
label intf extension          0          0          0          0
encap ID data                 0          0          0          0
RPF ID data                   0          0          0          0
bundle                        2          1          1         28
IDB                           2          1          1        344
ref list                      4          3          1         36
interface extension           4          3          1         44
next hop object               0          0          0          0
reg extension                 0          0          0          0
bundle member                 2          1          1        128
bundle member ptr             4          1          3         96
------------------------------------------------------------------
Total size:                                                  1028
------------------------------------------------------------------
```

show mrib platform trace

To display traces used in the platform-specific part of the Multicast Routing Information Base (MRIB) process, use the **show mrib platform trace** command in EXEC mode.

show mrib platform trace [{all all { file *file-name* **| hexdump** *trace-entry* **| last** *number-of-entries* **| location** *location-specification* **| reverse** *trace-entry* **| stats** *trace-entry* **| tailf** *latest-traces* **| usec** *timestamp-with-usec-detail* **| verbose** *internal-debugging-information* **wide** *specify-file-to-not-display-details* **| |***output-modifier-details* **}} | cluster** {*all* | *error* | *events*} *file* | *include* | *utility* | **{ usrtdir** *directory-name* | *directory-path* **cluster | lmrib-encapid-rpfid {all |error | events}| main {all |error | events}| other {all |error | events} | }]**

Syntax Description

all	Displays all the platform-specific traces. (Optional) all all file Enter a specific file name. (Optional) all all hexdump *trace-entry* Displays traces of the hexdump entry in hexadecimals. (Optional) all all last *number of entries* Displays the last *n* entries. (Optional) all all location *location-specification* Displays the card location. (Optional) all all reverse *trace-entry* Displays the latest traces first. (Optional) all all stats *trace-entry* Displays statistics for the trace entry. (Optional) all all tailf *trace-entry* Displays new traces as they are added. (Optional) all all usec *trace-entry* Displays timestamp with usec detail. (Optional) all all verbose *trace-entry* Displays internal debugging information. (Optional) all all wide*trace-entry* Does not display buffer name, node name, tid. (Optional) all all |*trace-entry* Displays output modifiers.
cluster	Displays the platform-specific cluster traces. For more information about the syntax for the router, use the question mark (?) online help function. (Optional) cluster all *cluster-trace-entry* Displays event and error traces. (Optional) cluster error *cluster-trace-entry* Displays only error traces. (Optional) cluster events *cluster-trace-entry* Displays only event traces.
lmrib-encapid-rpfid	Displays the MRIB Platform LMRIB, Encap ID and RPF ID traces. For more information about the syntax for the router, use the question mark (?) online help function. (Optional) lmrib-encapid-rpfid all *trace-entry* Displays event and error traces. (Optional) lmrib-encapid-rpfid error *trace-entry* Displays only error traces. (Optional) lmrib-encapid-rpfid events *trace-entry* Displays only event traces.

main	Displays the MRIB Platform main traces for routes and interfaces. For more information about the syntax for the router, use the question mark (?) online help function. (Optional) main all *main-trace-entry* Displays event and error traces. (Optional) main error *main-trace-entry* Displays only error traces. (Optional) main events *main-trace-entry* Displays only event traces.
other	Displays all other MRIB Platform main traces, such as virtual interfaces, regdb, and so on. For more information about the syntax for the router, use the question mark (?) online help function. (Optional) other all *other-trace-entry* Displays event and error traces. (Optional) other error *other-trace-entry* Displays only error traces. (Optional) other events *other-trace-entry* Displays only event traces.

Command Default

IPv4 addressing is the default.

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

show mrib platform trace location standby

To display platform-specific data for the Multicast Routing Information Base (MRIB) on a standby RP, use the **show mrib platform trace location standby** command in EXEC mode

.

show mrib [**vrf** *vrf-name*] **ipv4 platform trace** [**file** | **hexdump** | **last** | **reverse** | **stats** | **tailf** | **unique** | **verbose** | **wrapping**] **location standby**[*allnode-id*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
file	(Optional) Specifies the filename.
hexdump	(Optional) Displays the traces in hexadecimal form.
last	(Optional) Displays the last *n* entries.
reverse	(Optional) Displays the traces in reverse order.
stats	(Optional) Displays statistics.
tailf	(Optional) Displays new traces as they are added.
unique	(Optional) Displays unique entries with counts.
verbose	(Optional) Displays internal debugging information.
wrapping	(Optional) Displays wrapping entries.
location standby *node -id*	(Optional) Specifies the location of the trace.
location standby *all*	(Optional) Specifies that the trace be performed for all locations.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 5.2.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show mrib platform trace location standby** command:

```
RP/0/RSP0/CPU0:router#show mrib platform trace location standby

2 wrapping entries (512 possible, 0 filtered, 2 total)
```

show mrib route

To display all entries in the Multicast Routing Information Base (MRIB), use the **show mrib route** command in the appropriate mode.

show mrib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] [**old-output**] **route** [**summary** | **outgoing-interface** | [***** *source-address*] [*group-address* [/ *prefix-length*]]] [**detail**] [**rate**]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
*****	(Optional) Displays shared tree entries.
source-address	(Optional) Source IP address or hostname of the MRIB route. Format is: *A.B.C.D* or *X:X::X.*
group-address	(Optional) Group IP address or hostname of the MRIB route. F ormat is: *A.B.C.D* or *X:X::X.*
/prefix-length	(Optional) Prefix length of the MRIB group address. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value. Format is: *A.B.C.D* or *X:X::X.*
outgoing-interface	(Optional) Displays the outgoing-interface information.
summary	(Optional) Displays a summary of the routing database.
detail	(Optional) Displays the routing database with the platform data.
rate	(Optional) Displays the outgoing interface (OIF) egress rates per mroute.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release 3.7.2	This command was introduced.
Release 7.1.1	IPv6 support was added on this command.
Release 7.11.1	The **rate** keyword is introduced in this command to display the OIF egress rates per mroute.

Usage Guidelines

Each line card has an individual Multicast Forwarding Information Base (MFIB) table. The MFIB table maintains a subset of entries and flags updated from MRIB. The flags determine the forwarding and signaling behavior according to a set of forwarding rules for multicast packets. In addition to the list of interfaces and flags, each route entry shows various counters. Byte count is the number of total bytes forwarded. Packet count is the number of packets received for this entry.

The show mfib counter, on page 61 command displays global counters independent of the routes.

Task ID

Task ID	Operations
multicast	read

The following sample shows output from the **show mrib route**

```
Router# show mrib vrf BVI ipv6 route 2001:DB8:1::1 detail

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
    C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
    IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
    MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
    CD - Conditional Decap, MPLS - MPLS Decap, MF - MPLS Encap, EX - Extranet
    MoFE - MoFRR Enabled, MoFS - MoFRR State
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
    NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
    II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
    LD - Local Disinterest, DI - Decapsulation Interface
    EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
    EX - Extranet, A2 - Secondary Accept

(*,2001:DB8:1::1/32) Ver: 0x7380 Flags: D, FMA: 0x501b4944
  Up: 12:09:55

(*,2001:DB8:1::6/32) Ver: 0x1b11 Flags: S, FMA: 0x501b4938
  Up: 12:09:55

(*,2001:DB8:1::7/32) Ver: 0x4521 Flags: S, FMA: 0x501b492c
  Up: 12:09:55
  Outgoing Interface List
    GigabitEthernet0/0/0/8 Flags: II LI, Up: 03:32:28
```

The following sample output shows the **show mrib route** command with the **rate** keyword:

```
RP/0/RSP0/CPU0:LA# show mrib route rate

Fri Dec 17 19:30:21.733 UTC
(11.1.1.2,232.1.1.1) RPF nbr: 11.1.1.2 Flags: RPF
  Up: 00:40:52
  Incoming Interface List
    HundredGigE0/0/0/2 Flags: A, Up: 00:40:52
    Node Rate (0/0/CPU0):    99 pps / 38407 bps
      HW Incoming count: 205444 packets
      HW Drop count:     0 packets
  Outgoing Interface List
    HundredGigE0/0/0/1 Flags: F NS, Up: 00:40:52
    Node Rate (0/0/CPU0):      99 pps / 38407 bps
      HW Forwarding count: 205444 packets
      HW Drop count:       0 packets
     Interface Rates:
        Interface: HundredGigE0/0/0/1
        Outgoing Packet Rate (PPS rate / BPS rate): 100 / 100
        HW Forwarding count: 10000 packets
        HW Drop count: 0 packets


(11.1.1.2,232.2.2.2) RPF nbr: 11.1.1.2 Flags: RPF
```

```
Up: 00:40:52
Incoming Interface List
  HundredGigE0/0/0/2 Flags: A, Up: 00:40:52
 Node Rate (0/0/CPU0):    74 pps / 28798 bps
    HW Incoming count: 154084 packets
    HW Drop count:     0 packets
Outgoing Interface List
  HundredGigE0/0/0/1 Flags: F NS, Up: 00:40:52
  Node Rate (0/0/CPU0):      74 pps / 28798 bps
    HW Forwarding count: 154084 packets
    HW Drop count:       0 packets
   Interface Rates:
      Interface: HundredGigE0/0/0/1
      Outgoing Packet Rate (PPS rate / BPS rate): 100 / 100
      HW Forwarding count: 10000 packets
      HW Drop count: 0 packets
```

Related Commands

Command	Description
show mfib counter, on page 61	Displays MFIB counter statistics for packets that have dropped.
show mrib route-collapse, on page 192	Displays the contents of the MRIB route collapse database.
show mfib route, on page 153	Displays all entries in the MFIB table.

show mrib route-collapse

To display the contents of the Multicast Routing Information Base (MRIB) route-collapse database, use the **show mrib route-collapse** command in the appropriate mode.

show mrib [**vrf** *vrf-name*] **ipv4 route-collapse** [*core-tree*]

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
core-tree	(Optional) IPv4 Multicast Distribution Tree (MDT) group address.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib route-collapse** command:

```
RP/0/RSP0/CPU0:router# show mrib route-collapse

226.1.1.1  TID: 0xe0000038   TLC TID: 0xe0000038
  Customer route database count: 5
    (192.168.5.204,224.0.1.40/32)
    (*,226.226.226.226/32)
    (*,228.228.228.228/32)
    (192.168.113.17,228.228.228.228/32)
    (*,229.229.229.229/32)
  Core route database count: 4
    (*,226.1.1.1/32)
    (192.168.5.201,226.1.1.1/32)
    (192.168.5.202,226.1.1.1/32)
    (192.168.5.204,226.1.1.1/32)
  Core egress node database count: 1
    nodeid        slot            refcount
    0x20          0/2/CPU0        1

192.168.27.1  TID: 0xe0000039   TLC TID: 0xe0000039
  Customer route database count: 1
    (192.168.113.33,227.227.227.227/32)
  Core route database count: 3
    (*,227.27.27.1/32)
```

```
    (192.168.5.201,227.27.27.1/32)
    (192.168.5.202,227.27.27.1/32)
  Core egress node database count: 1
    nodeid        slot            refcount
    0x20          0/2/CPU0        1

192.168.28.1  TID: 0xe000003a   TLC TID: 0xe000003a
  Customer route database count: 2
    (192.168.5.204,224.0.1.40/32)
    (192.168.113.49,229.229.229.229/32)
  Core route database count: 3
    (192.168.5.201,228.28.28.1/32)
    (192.168.5.202,228.28.28.1/32)
    (192.168.5.204,228.28.28.1/32)
  Core egress node database count: 1
    nodeid        slot            refcount
    0x20          0/2/CPU0        1
```

Related Commands

Command	Description
show mrib route, on page 189	Displays all entries in the Multicast Routing Information Base (MRIB).

show mrib route outgoing-interface

To display the outgoing-interface information on the Multicast Routing Information Base (MRIB), use the **show mrib route outgoing-interface** command in the appropriate mode.

show mrib route outgoing-interface [*****source-address] [group-address [/prefix-length]]

Syntax Description

*****	(Optional) Displays shared tree entries.
A.B.C.D	(Optional) Source IP address or hostname of the MRIB route. Format is: *A.B.C.D*
A.B.C.D	(Optional) Group IP address or hostname of the MRIB route and the prefix length.
/prefix-length	(Optional) Prefix length of the MRIB group address. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value. Format is: *A.B.C.D*

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib route outgoing-interface** command:

```
RP/0/RSP0/CPU0:router# show mrib route outgoing-interface

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
    C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
    IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
    MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
    CD - Conditional Decap, MPLS - MPLS Decap, MF - MPLS Encap, EX - Extranet
    MoFE - MoFRR Enabled, MoFS - MoFRR State

(*,224.0.0.0/4), Up:6d10h, OIF count:0, flags: C
(*,224.0.0.0/24), Up:6d10h, OIF count:0, flags: D
(*,224.0.1.39), Up:6d10h, OIF count:3, flags: S
(10.1.1.1,224.0.1.39), Up:6d10h, OIF count:11, flags:
```

```
(10.2.2.2,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.3.3.3,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.4.4.4,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.5.5.5,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.6.6.6,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.7.7.7,224.0.1.39), Up:00:04:17, OIF count:11, flags:
(10.8.8.8,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.9.9.9,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.10.10.10,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.21.21.21,224.0.1.39), Up:6d06h, OIF count:11, flags:
(*,224.0.1.40), Up:6d10h, OIF count:2, flags: S
(10.1.1.1,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.2.2.2,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.6.6.6,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.13.4.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.14.4.4,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.14.8.4,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.21.21.21,224.0.1.40), Up:6d06h, OIF count:11, flags:
(10.23.4.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.23.8.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.34.4.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.34.8.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.35.4.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.35.4.5,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.38.4.8,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.45.4.5,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.49.4.9,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.105.4.10,224.0.1.40), Up:6d10h, OIF count:11, flags:
(*,225.0.0.0/8), Up:6d06h, OIF count:0, flags: C
(*,226.0.0.0/8), Up:6d06h, OIF count:0, flags: C
(*,232.0.0.0/8), Up:6d10h, OIF count:0, flags: D
(10.6.6.6,232.1.1.1), Up:6d10h, OIF count:3, flags:
(10.7.7.7,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.8.8.8,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.9.9.9,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.10.10.10,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.21.21.21,232.1.1.1), Up:6d06h, OIF count:3, flags:
```

Related Commands

Command	Description
show mrib route, on page 189	Displays all entries in the Multicast Routing Information Base (MRIB).

show mrib table-info

To display Multicast Routing Information Base (MRIB) table information, use the **show mrib table-info** command in the appropriate mode.

show mrib [**vrf** *vrf-name*] **ipv4 table-info**

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib table-info** command:

```
RP/0/RSP0/CPU0:router# show mrib vrf vrf101 table-info

VRF: default [tid 0xe0000000]
Registered Client:
  igmp [ccbid: 0 cltid: 4485366]
  pim [ccbid: 1 cltid: 4485368]
  bcdl_agent [ccbid: 2 cltid: 1]
  msdp [ccbid: 3 cltid: 8827135]
```

Table 19: show mrib table-info Field Descriptions

Field	Description
VRF	Default VRF or a VRF configured for the purpose of an override in MVPN.
cltid	Client ID.
bcdl_agent	A process like igmp and pim, which is used to download routes to line card.
MDT handle	MDT interface handle for this VRF.
MDT group	Default MDT group associated with this VRF.

Field	Description
MDT source	Per-VRF MDT source information.

Related Commands

Command	Description
show mrib tlc, on page 198	Displays the contents of the Multicast Routing Information Base (MRIB) table-line card (TLC) database.

show mrib tlc

To display the contents of the Multicast Routing Information Base (MRIB) table-line card (TLC) database, use the **show mrib tlc** command in the appropriate mode.

show mrib [**vrf** *vrf-name*] **ipv4 tlc**

Syntax Description

vrf *vrf-name*	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib tlc** command:

```
RP/0/RSP0/CPU0:router# show mrib tlc

VRF: default [tid 0xe0000000]
Master LC slot: Not selected
Associated MDT group: 0
Forwarding LC node: 0
```

This table describes the significant fields shown in the display.

Table 20: show msdp peer Field Descriptions

Field	Description
Associated MDT group	IP address of the MSDP peer.
Master LC slot	Indicates whether the master LC slot has been selected.
Forwarding LC node	Autonomous system to which the peer belongs.
Associated MDT group	Indicates the number of associated MDT groups.

show mrib vrf vrf_name route

To display the detail routing DB with platform data information for multicast routing information base, use the **show mrib vrf** *vrf_name* **route** command in the EXEC mode.

show mrib vrf *vrf_name* **route** *ip_address* **detail**

Syntax Description

detail	Displays routing DB with platform data.
ip_address	Specifies the group IP address.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read

```
RP/0/RSP0/CPU0:router# show mrib vrf vrf1 route  232.1.1.1 detail
(192.1.1.2,232.1.1.1) Ver: 0x32b9 RPF nbr: 192.1.1.2 Flags: EID,
 PD: Slotmask: 0x0
     MGID: 17754
  Up: 12:35:50, Route node: 0x504f8df8
  RPF-ID: 0, Encap-ID: 4, EPtr: 0x505463c4, Hd: 0x502df6f8, Cts: 1, 0, 0, 0
  Acc: 1 (MDT: 0), Fwd: 1 (0), SRD: (0,0), Encap-next: 0x0
  Incoming Interface List
    GigabitEthernet0/0/0/1.1 Flags: A, Up: 05:30:09, Ptrs: 0x502df438, 0x0
  Outgoing Interface List
    tunnel-mte1 Flags: F NS LI LVIF, Up: 12:35:50, Ptrs: 0x502df6f8, 0x0
       LI add redist count: 2
```

static-rpf

To configure a static Reverse Path Forwarding (RPF) rule for a specified prefix mask, use the **static-rpf** command in an appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

static-rpf *prefix-address prefix-mask type path-id next-hop-address*

Syntax Description

prefix-address	IP address of a prefix for an address range.
prefix-mask	Prefix mask for an address range. Range is 0 to 32 for IPv4 .
type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
next-hop-address	IP address for an RPF neighbor.

Command Default

A static RPF rule for a specified prefix mask is not configured.

Command Modes

Multicast routing address family ipv4 and ipv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

The **static-rpf** command is used to configure incompatible topologies for unicast and multicast traffic.

Use the **static-rpf** command to configure a static route to be used for RPF checking in Protocol Independent Multicast (PIM) instead of using the unicast routing table.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example configures the static RPF rule for IP address 10.0.0.1:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
```

```
RP/0/RSP0/CPU0:router(config-mcast)# vrf green
RP/0/RSP0/CPU0:router(config-mcast)# static-rpf 10.0.0.1 32 GigE 0/0/5/0 10.1.1.1
```

Related Commands

Command	Description
show pim context	Displays reverse path forwarding (RPF) table information configured for a VRF context.

source-tree-prune-delay

To set the delay-time for the (S,G) prune of the ingress-PE (provider edge), use the **source-tree-prune-delay** command in the appropriate mode. To remove the set delay, use the **no**form of the command.

source-tree-prune-delay *time*

Syntax Description

time	Delay in seconds. Range is 0 to 300.

Command Default

60 seconds

Command Modes

C-multicast-routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

This command is used to delay (S,G) Prune on the Ingress-PE, when the last Type-7 route is withdrawn.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to use the **source-tree-prune-delay** command:

```
RP/0/RSP0/CPU0:router (config-pim-v1-ipv4-mdt-cmcast) # source-tree-prune-delay 100
```

suppress-pim-data-signaling

To suppress PIM data signaling, use the **suppress-pim-data-signaling** command in the appropriate mode. To remove the suppressed condition, use the **no** form of the command.

suppress-pim-data-signaling

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

PIM C-multicast routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

This command supports c-anycast RP and can be used only under the PIM c-multicast routing mode.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to use the **suppress-pim-data-signaling**command:

```
RP/0/RSP0/CPU0:router (config-pim-v1-ipv4-mdt-cmcast) # suppress-pim-data-signaling
```

suppress-shared-tree-join

To suppress shared tree joins and support the SPT-only mode, use the **suppress-shared-tree-join** command in the appropriate mode.

To remove the suppress condition, use the **no**form of the command.

suppress-shared-tree-join

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

C-multicast-routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

This command enables the SPT-only (Shortest Path Tree) mode.

Task ID

Task ID	Operation
multicast	read, write

Example

This command shows how to use the **suppress-shared-tree-join** command:

```
RP/0/RSP0/CPU0:router(config-pim-v1-ipv4-mdt-cmcast) # suppress-shared-tree-join
```

ttl-threshold (multicast)

To configure the time-to-live (TTL) threshold for packets being forwarded out an interface, use the **ttl-threshold** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

ttl-threshold *ttl*

Syntax Description

ttl	Time to live value. Range is 1 to 255.

Command Default

ttl : 0

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Only multicast packets with a TTL value greater than the threshold are forwarded out of the interface. The TTL threshold is compared to the TTL of the packet after it has been decremented by one and before being forwarded.

Configure the TTL threshold only on border routers.

Note Do not confuse this command with the **ttl-threshold (MSDP)** command in router MSDP configuration mode that is used to confine the multicast data packet TTL to be sent by an Multicast Source Discovery Protocol (MSDP) Source-Active (SA) message.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the TTL threshold to 23, which means that a multicast packet is dropped and not forwarded out of the GigE 0/1/0/0 interface:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# interface GigE 0/1/0/CPU0
RP/0/RSP0/CPU0:router(config-mcast-default-ipv4-if)# ttl-threshold 23
```

Related Commands

Command	Description
ttl-threshold (MSDP)	Limits which multicast data packets are sent in SA messages to an MSDP peer.

unicast-reachability

To disable VPN-IP attributes, use the **unicast-reachability** command in the appropriate mode. To restore the attributes, use the **no**form of the command.

unicast-reachability [**connector-disable** | **source-as-disable** | **vrf-route-import-disable**]

Syntax Description

connector-disable	Disables connector addition.
source-as-disable	Disables source AS extended community addition.
vrf-route-import-disable	Disables VRF route import extended community addition.

Command Default

None

Command Modes

C-multicast routing configuration mode

Command History

Release	Modification
Release 4.3	This command was introduced.

Usage Guidelines

This command controls addition of extended communities to unicast VPN-IP routes. These attributes have specific purposes in PIM and BGP C-multicast Routing.

Task ID

Task ID	Operation
multicast	read, write

Example

This example shows how to use the **unicast-reachability** command:

```
RP/0/RSP0/CPU0:router (config-pim-v1-ipv4-mdt-cmcast) # unicast-reachability connector-disable
```

vrf (multicast)

To configure a virtual routing and forwarding (VRF) instance for a VPN table, use the **vrf** command in multicast routing configuration mode. To remove the VRF instance from the configuration file and restore the system to its default condition, use the **no** form of this command.

vrf *vrf-name* **ipv4**

Syntax Description

vrf-name	Name of the VRF instance. The following names cannot be used: all, default, and global.
ipv4	(Optional) Configures IPv4 address prefixes.

Command Default

No default behavior or values.

Command Modes

Multicast routing configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

A VRF instance is a collection of VPN routing and forwarding tables maintained at the provider edge (PE) router.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure a VRF instance and enter VRF configuration mode:

```
RP/0/RSP0/CPU0:router(config)# multicast-routing
RP/0/RSP0/CPU0:router(config-mcast)# vrf vrf_1
RP/0/RSP0/CPU0:router(config-mcast-vrf_1-ipv4)# mdt ?

data     Data MDT group configuration
default  MDT default group address
mtu      MDT mtu configuration
source   Interface used to set MDT source address
```

Related Commands

Command	Description
boundary, on page 15	Configures a boundary to keep multicast packets from being forwarded.
accounting per-prefix, on page 4	Enables per-prefix counters only in hardware.
interface (multicast), on page 27	Configures multicast interface properties.
log-traps, on page 33	Enables logging of trap events.

Command	Description
multipath, on page 48	Enables Protocol Independent Multicast (PIM) to divide the multicast load among several equal-cost paths.
rate-per-route, on page 53	Enables individual (source, group [S, G]) rate calculations.
ssm	Defines the Protocol Independent Multicast (PIM)-Source Specific Multicast (SSM) range of IP multicast addresses.
static-rpf, on page 200	Configures a static Reverse Path Forwarding (RPF) rule for a specified prefix mask.

cef platform lsm frr-holdtime

To configure the frr-holdtime of MLDP LSPs in a scale setup (with more than 500 LSPs configured), use the cef platform lsm frr-holdtime command in Global Configuration mode.

cef platform lsm frr-holdtime *seconds*
Global Configuration mode

Syntax Description

seconds	The number of seconds to set the frr-holdtime. Default value is 2 seconds. **Note** The range of the frr-holdtime (in seconds) is 3 to 180 seconds.

Command Default

None

Command Modes

Global Configuration

Command History

Release	Modification
Release 5.3.2	This command is introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

The following example shows how to set the frr-holdtime value to 45 seconds.

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# cef platform lsm frr-holdtime 45
```